

January 8, 2020

Ms. Kelly Kinkaid PG; Licensed Professional Geologist
Pennsylvania Department of Environmental Protection
Bureau of Waste Management
909 Elmerton Avenue
Harrisburg, PA 17110-8200

REF: 3rd Quarter 2019 Form 19, 50 and 52 Submittal
Frey Farm Landfill; BWM Permit #101389

Dear Ms. Kinkaid:

In accordance with the Municipal Waste Management Regulations, the Lancaster County Solid Waste Management Authority (LCSWMA) continues the above-referenced monitoring program.

ARM Group has provided an analysis of this 3rd Quarter 2019 data for groundwater, leachate, and contiguous landowners. ARM Group's report is attached to this submittal.

Groundwater:

In accordance with the Municipal Waste Management Regulations, the Lancaster County Solid Waste Management Authority (LCSWMA) continues the above-referenced monitoring program. Attached are the Forms 19, laboratory reports, and data export excel file for uploading the data into your LandLinks Access database.

Leachate:

In accordance with both the Pennsylvania Municipal Waste Management and the Federal Subtitle D Regulations, the Lancaster County Solid Waste Management Authority (LCSWMA) continues to complete the above referenced monitoring program. Enclosed is the Department's Form 50 - "Municipal Waste Landfill Leachate Analysis" for the quarterly monitoring period.

- LCSWMA continues to monitor the Form 50 parameters from location FFLEINFS. This location is the leachate collection system for the Frey Farm Landfill and represents "raw" leachate characteristics for the facility, as collected from the six (6) landfill cells.
- As indicated on the Form 50, the primary leachate collection and secondary detection systems encompass approximately 93 acres of drainage area.
- At your request, we have included analyses of the four (4) secondary individual detection zone discharges with an individual Form 50 for each.

- Included on the CD are files which contains the FFLEINFS data in a compatible format for your LandLinks software. The CD also contains a pdf file of the laboratory results and the Form 50.

In accordance with Section 273.255(d)(1)(2) and (3) of the Municipal Waste Management Regulations, the Lancaster County Solid Waste Management Authority (LCSWMA) is providing this secondary flow report.

The 3rd Quarter Frey Farm Landfill (FFLF) secondary flow was noted at 0.94 gallons per day per acre (gpdpa); which is below the regulatory limit of 100 gpdpa. The 2nd Quarter secondary flow was 0.62% of the primary flow, which is below the regulatory 10% (maximum). Table 1 indicates this quarter's weekly flow information for the six (6) operational cells at the FFLF, cells 2 and 4 continue to indicate no secondary flow present.

- Consistent with all previous monitoring events, LCSWMA remains well below the secondary leachate flow threshold (100-gpdpa)

Contiguous Landowners:

Attached are the Forms 52, laboratory reports, and a data export excel file for uploading the data into your LandLinks Access database.

Please do not hesitate in contacting me if you have any questions or concerns at nrogers@lcswma.org.

Respectfully submitted,



Nick Rogers
FFLF Facility Manager

Enclosures

Cc: LCSWMA: Environmental, John Ridinger, Aaron Rice
PA DEP: Ed Rawski, Randy Weiss



ARM Group LLC

Engineers and Scientists

January 7, 2020

Mr. Daniel Brown
Environmental Compliance Manager
Lancaster County Solid Waste
Management Authority
1299 Harrisburg Pike
PO Box 4425
Lancaster, PA 17604

Re: LCSWMA Frey Farm Landfill
Permit No. 101389
Manor Township
Lancaster County, Pennsylvania
Third Quarter 2019 Water Quality Data Review
ARM Project 190783

Dear Mr. Brown:

ARM Group LLC (ARM) has prepared this assessment at the request of the Lancaster County Solid Waste Management Authority (LCSWMA) to provide an evaluation of the Fourth Quarter 2019 water quality monitoring results for Frey Farm Landfill (FFLF). As part of this evaluation, ARM reviewed the historic and Third Quarter 2019 laboratory analytical results for the sampled upgradient and downgradient Form 19 groundwater monitoring wells, Form 50 leachate collection and detection zones, and Form 52 contiguous private wells.

The groundwater and leachate samples collected by LCSWMA during the Third Quarter 2019 were analyzed for quarterly Form 19, Form 50, and Form 52 parameters, as applicable. The following narrative provides a summary of noteworthy observations of the results for the Third Quarter of 2019, as well as a general discussion of recent data trends.

Background/Upgradient Parameter Concentrations

To determine if the concentration of a given parameter at each groundwater monitoring location is elevated compared to the background/upgradient concentration, ARM calculated the 95% upper prediction limits (UPLs) using historical data from the upgradient well, FFMP002W (MP-2), using laboratory analytical results provided by LCSWMA from the First Quarter 2009 through the most recent quarter (Third Quarter 2019).

The UPL approach is used to predict the upper limit of possible future values based on a background data set. A 95% UPL established from background data represents the upper limit which will predict if an independently obtained future sample result exceeds background levels with 95% confidence. If the concentration of a given parameter in a downgradient well exceeds its established UPL, this represents a statistically significant exceedance of background groundwater quality.

To calculate the UPLs, ARM first applied the Dixon's and Rosner's Tests for outliers in ChemStat® statistical analysis software (version 6.3.0.2, Starpoint Software, Inc., ©1996-2013) to identify potential historical anomalous concentrations in MP-2. The Dixon's Test applies to populations of 3-25 values, and the Rosner's Test is valid for populations of more than 25 values. ARM identified 44 statistical outliers at a 95% significance level in the historical dataset which did not appear to be part of a long-term concentration trend. No outliers were identified from the Third Quarter 2019 analytical results.

The most appropriate method of calculating a UPL varies according to the distribution of each dataset. After removing outliers, ARM assessed the remaining historical MP-2 concentration data for each parameter to determine the best fitting statistical distribution (i.e., normal, lognormal, gamma or no distribution) at a 95% significance level using the EPA's ProUCL statistical analysis software (version 5.1.002, EPA, 2015). ARM then used ProUCL to calculate the UPLs for each parameter, which are summarized in the enclosed **Attachment 1**. The exported ProUCL statistical calculation sheets are included in the enclosed **Attachment 2**.

For pH, a one-sided UPL is not appropriate because of the double-sided nature of this parameter. ARM assessed the downgradient pH data by investigating time-series concentration plots for identifiable trends and comparing the Third Quarter 2019 results to the historical range of concentrations in both the sampled well and the upgradient well.

The Interstate Technology and Regulatory Council (ITRC) recommends that a UPL should only be applied for background populations of at least 8-10 observations. Use of smaller populations containing either fewer measurements or multiple non-detections can result in skewed datasets and statistically flawed UPL calculations.

The background population is less than 8 for all volatile organic compounds (VOCs), chemical oxygen demand (COD), and total phenolics because of a historical lack of detections in MP-2. A background level could therefore not be accurately calculated for these parameters, which are labeled with asterisks in the enclosed **Attachment 1**. ARM substituted the laboratory reporting detection limit for the statistical background standard when assessing these parameters in the downgradient wells due to their historical absence in the upgradient groundwater.

The attached **Table 1** summarizes the background exceedances in the downgradient Form 19 wells during the Third Quarter 2019. The attached **Table 2** summarizes the background exceedances in the downgradient Form 52 wells during the Third Quarter 2019. Background exceedances shown in **Tables 1 and 2** denote a statistically significant increase of concentrations relative to those observed historically in the upgradient well MP-2. Close attention should be paid to results from the monitoring locations with noted water quality changes during future



sampling events to evaluate the presence of any positive or negative trends for the parameters of concern.

Individual Form 19 Well Summary

- MP-2 – No parameters are above the statistical background level in this upgradient well for the Third Quarter 2019, indicating that groundwater quality appears relatively stable upgradient of the site. Alkalinity, ammonia-N, calcium, manganese, potassium, sodium, specific conductance (SpC), total dissolved solids (TDS), and total organic carbon (TOC) concentrations increased rapidly in 2012 to historical high levels. All these parameters have returned to apparently stable, long-term trends in line with historical average levels since 2014. pH has fluctuated over a range of approximately 0.5 unit over the past several years but appears to have a steady long-term trend. All other Form 19 analytical parameters appear to be stable and within historical concentration ranges.
- MP-5 – Parameters above background in this well include chloride, magnesium, SpC, TDS, and total organic carbon (TOC). Concentrations of these parameters historically appeared stable until an increase in 2018. These concentrations have decreased over the past five quarters and now generally appear in line with the historical averages. pH appears to mimic the trend observed in the upgradient well at levels approximately 0.5 unit higher, on average, while fluctuating over a slightly wider range.
- MP-15 – No parameters are above background in this well for the Third Quarter 2019. pH appears to mimic the trend observed in the upgradient well at levels approximately 0.7 unit higher, on average, while fluctuating over a slightly wider range.
- MP-16 – Chloride and magnesium levels are above background in this well. Concentrations of these parameters appear to have a stable trend long-term with short-term fluctuations. pH appears to mimic the trend observed in the upgradient well at levels approximately 0.8 unit higher than background.
- MP-17 – Parameters above background in this well include ammonia-N, calcium, chloride, magnesium, manganese, SpC, TDS, TOC, and turbidity. Concentrations of most of these parameters appear to be increasing over time. Two instances of apparent rapid increases in concentration occurred during 2012 and 2016. After both events, these parameter levels have appeared to stabilize. pH appears to mimic the trend observed in the upgradient well at levels approximately 0.8 unit higher than background.
- MP-18 – Parameters above background in this well include chloride, magnesium, manganese, and TDS. Concentrations of these parameters appeared to spike during the First Quarter 2018 sampling event but have since returned to near historical average levels. pH appears to mimic the trend observed in the upgradient well at levels approximately 0.5 unit higher, on average.
- MP-19 – Chloride and TOC levels are above background in this well. Chloride concentrations appear to be slowly increasing over time. TOC levels appear to fluctuate



across a range of approximately 2.5 mg/L but with no apparent long-term trend. pH appears to mimic the trend observed in the upgradient well at levels approximately 1.5 units higher, on average.

- MP-25 – Parameters above background in this well include chloride, magnesium, TDS, and TOC. Concentrations of these parameters appear to be fluctuating rapidly and increasing slowly over time. pH appears to be increasing slowly since 2016 and is currently approximately 1.5 units higher than background.
- MP-28 – Parameters above background in this well include chloride, magnesium, and TDS. Chloride and TDS concentrations appear to be elevated yet stable over time. Magnesium concentrations appear to be decreasing as a long-term trend with occasional fluctuations. pH appears to mimic the trend observed in the upgradient well at levels approximately 0.6 unit higher, on average, while fluctuating over a slightly wider range.
- MP-29 – Chloride levels are above background in this well and appear to fluctuate between 20-160 mg/L in a seasonal pattern. There does not appear to be a long-term increasing or decreasing trend, though. pH appears to mimic the trend observed in the upgradient well at levels approximately 0.5 unit higher, on average.
- MP-2DW – Parameters above background in this well include ammonia-N, calcium, chloride, iron, magnesium, manganese, SpC, TDS, and turbidity. These parameter concentrations appear to have increased between the Third Quarter 2017 and Fourth Quarter 2018 sampling events. They generally appear to be following a decreasing trend during subsequent quarters. pH appears to mimic the trend observed in the upgradient well at levels approximately 2.1 units higher, on average.
- MP-2SW – Parameters above background in this well include chloride, iron, SpC, TOC, and turbidity. Chloride and SpC levels appear to be decreasing over time. Iron, TOC, and turbidity appear to be increasing over time with occasional fluctuations. pH appears to mimic the trend observed in the upgradient well at levels approximately 0.8 unit higher, on average.
- MP-31 – Parameters above background in this well include iron, manganese, and turbidity. These parameter concentrations appear to be increasing slowly since the First Quarter 2018 sampling event. pH appears to mimic the trend observed in the upgradient well at levels approximately 2.0 units higher, on average, while fluctuating over a wider range.
- MP-32 – Parameters above background in this well include ammonia-N, iron, manganese, and turbidity. These parameter concentrations appear to be fluctuating rapidly but do not appear to show a long-term increasing or decreasing trend. pH appears to mimic the trend observed in the upgradient well at levels approximately 1.8 units higher, while fluctuating over a wider range.
- MP-33 – Parameters above background in this well include ammonia-N, chloride, iron, manganese, and turbidity. These parameter concentrations appear to be fluctuating but do



not appear to show a long-term increasing or decreasing trend. pH appears to mimic the trend observed in the upgradient well at levels approximately 0.9 unit higher, on average.

- MP-3A – Magnesium levels are above background in this well but appear to be steady long-term. pH appears to mimic the trend observed in the upgradient well at levels approximately 0.2 unit higher, on average.
- MP-4A – Parameters above background in this well include alkalinity (bicarbonate and total), calcium, chloride, magnesium, SpC, and TDS. All these parameter concentrations appear to be stable or decreasing long-term. Calcium and TDS levels appear to be fluctuating rapidly within their long-term trends. pH appears to mimic the trend observed in the upgradient well at levels approximately 1.9 units higher, on average, while fluctuating over a slightly wider range.
- MP-26R – Parameters above background in this well include chloride, magnesium, manganese, SpC, sulfate, TDS, and TOC. Most of these parameters appear to be increasing slowly since 2014. Sulfate and TOC appear to be fluctuating rapidly but not increasing long-term. pH appears to mimic the trend observed in the upgradient well at levels approximately 0.4 unit higher, on average.
- MP-30R – Parameters above background in this well include chloride, magnesium, manganese, SpC, TDS, and turbidity. These parameter concentrations appear to be fluctuating across a relatively wide range of values with no apparent long-term trends. pH appears to mimic the trend observed in the upgradient well at levels approximately 0.6 unit higher, on average, while fluctuating over a wider range.

Parameters not noted above are either at or below background levels. Overall, the groundwater quality at FFLF appears to be stable. Most parameters noted as being elevated above background levels do not appear to be increasing over time. Several parameters appear to be fluctuating but do not show an apparent long-term increasing or decreasing trend. ARM will continue to closely assess the noted parameters with increasing trends to see if any changes to the trends occur over time.

Form 50 Leachate Zone Summary

ARM reviewed the historic and Third Quarter 2019 laboratory analytical results for sample location FFLEINFS (grab samples collected from the combined flow from FFLF's primary leachate collection lines) and four (4) manholes which represent the secondary leachate detection zones (FFMH01SS, FFMH03SS, FFMH05SS, and FFMH06SS).

Leachate flows in the primary and secondary zones appear to be generally stable over time. Flows from the secondary zones appear to fluctuate seasonally, with the highest flows generally occurring in the first quarter and the lowest flows generally occurring in the third quarter.



VOC Detections and Apparent Trends

2-butanone (MEK), 4-methyl-2-pentanone (MIK), acetone, methylene chloride, and toluene have historically been present in FFLEINFS, but none of these VOC concentrations appear to be increasing over time.

1,1-dichloroethane, 1,4-dichlorobenzene, acetone, benzene, cis-1,2-dichloroethene, and ethylbenzene have historically been present at low levels in FFMH01SS. 1,4-dichlorobenzene levels appear to be very slowly increasing over time, and the other noted VOC concentrations appear to be stable or decreasing.

Other Form 50 Detections and Apparent Trends

Ammonia-N, barium, chloride, iron, pH, potassium, sodium, and TOC levels appear to be increasing long-term at FFLEINFS and FFMH01SS. COD, nitrate-N, SpC, sulfate, TDS, and TOC appear to be decreasing at FFMH05SS. Alkalinity, calcium, magnesium, and manganese concentrations fluctuate across a wide range of values in the historical leachate results, but no long-term trends are apparent for these parameters. ARM will continue to closely assess the noted parameters with increasing trends to see if any changes to the trends occur over time.

Form 52 Contiguous Private Wells Summary

ARM reviewed the Third Quarter 2019 groundwater monitoring results for ten (10) contiguous privately-owned wells. Samples collected from these wells were analyzed for Form 52 parameters. The attached **Table 2** summarizes the background exceedances in the downgradient Form 52 wells during the Third Quarter 2019. Background exceedances shown in **Table 2** denote a statistically significant increase of concentrations relative to those observed historically in the upgradient well MP-2. Most notably, several wells displayed a background exceedance for chloride, potassium, sodium, and TDS. ARM will continue to assess Form 52 results to see if any apparent concentration trends develop.



Closing

If you have any questions regarding this water quality data evaluation, please contact the undersigned at 717-533-8600. ARM appreciates the opportunity to assist LCSWMA with its assessment of quarterly water quality data collected at FFLF.

Sincerely,
ARM Group LLC



Ryan Brandon
Project Hydrogeologist II



Scott Wendling, P.G.
Vice President, Sr. Project Manager



Enclosed: Tables 1-2
Attachments 1-2



TABLES



Table 1. LCSWMA Frey Farm Landfill Form 19 Groundwater Monitoring Well Background Standard Comparisons - 3rd Quarter 2019

Parameter	Background Standard	Units	FFMP002W	FFMP005W	FFMP015W	FFMP016W	FFMP017W	FFMP018W	FFMP019W	FFMP025W	FFMP028W	FFMP029W	FFMP02DW	FFMP02SW	FFMP031W	FFMP032W	FFMP033W	FFMP03AW	FFMP04AW	FFMP26RW	FFMP30RW
1,1,1-TRICHLOROETHANE	1*	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-DICHLOROETHANE	1*	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-DICHLOROETHENE	1*	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-DIBROMOETHANE (EDB) (ETHYLENE DIBROMIDE)	1*	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-DICHLOROETHANE	1*	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
ALKALINITY	147.9	mg/L	<5	52	21	42	46	18	69	40	33	13	125	14	68	67	43	21	221	46	34
AMMONIA-NITROGEN	0.313	mg/L	0.10	0.13	<0.10	<0.10	0.60	0.16	0.14	0.13	<0.10	0.17	0.62	0.13	0.27	0.57	0.69	<0.10	<0.10	<0.10	0.13
BENZENE	1*	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
BICARBONATE	143.2	mg/L	<5	52	21	42	46	18	69	40	33	13	125	14	68	67	43	21	221	46	34
CALCIUM, TOTAL	73.74	mg/L	20.2	72.2	9.3	29.9	99.1	30.5	56.6	27.4	41.1	11.2	104	22.9	40.6	15.4	26.6	17.0	152	67.8	37.6
CHLORIDE	30.97	mg/L	22.1	188	12.0	83.1	405	106	75.9	56.8	88.8	50.7	275	130	24.6	21.9	41.0	27.5	317	191	219
cis 1,2-DICHLOROETHENE	1*	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
COD (CHEMICAL OXYGEN DEMAND)	15*	mg/L	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
ETHYLBENZENE	1*	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
FLUORIDE	0.5	mg/L	<0.2	<0.5	<0.2	<0.2	<0.5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
IRON, TOTAL	0.185	mg/L	<0.06	<0.06	<0.06	<0.06	0.09	<0.06	<0.06	<0.06	<0.06	<0.06	0.52	9.6	3.8	5.8	4.5	<0.06	<0.06	<0.06	0.07
MAGNESIUM, TOTAL	10.17	mg/L	7.7	16.6	9.8	14.2	41.2	15.7	5.4	13.0	17.4	8.6	16.1	9.6	3.9	4.9	8.9	11.0	23.5	19.1	14.9
MANGANESE, TOTAL	0.329	mg/L	0.26	0.080	0.040	0.020	0.49	0.36	<0.0056	0.0063	0.0088	0.020	0.43	0.11	0.36	0.63	0.48	0.26	0.31	0.51	2.6
METHYLENE CHLORIDE	1*	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
NITRATE-NITROGEN	28.82	mg/L	22.5	2.2	10.1	11.5	2.0	5.7	0.22	11.5	17.7	3.6	8.9	14.4	<0.2	<0.2	12.0	20.0	0.2	2.3	5.8
POTASSIUM, TOTAL	10.69	mg/L	5.57	6.07	6.46	6.22	6.34	5.93	7.03	7.07	6.85	5.89	7.85	6.72	7.66	7.33	6.41	6.08	7.70	6.00	6.36
SODIUM, TOTAL	22.3	mg/L	1.0	2.8	2.2	2.2	6.2	5.0	0.93	2.2	2.2	1.8	1.7	5.3	1.4	1.2	1.5	1.4	2.3	8.0	5.3
SPEC. COND., LAB	582.1	µmho/cm	257	888	234	479	1,520	528	421	402	572	221	1,250	644	274	172	298	254	1,430	912	915
SULFATE	59.97	mg/L	12.8	59.2	45.9	27.8	56.8	39.4	14.0	23.1	24.5	4.1	29.1	31.7	42.9	<2.0	8.1	2.8	46.9	74.5	26.9
TDS (TOTAL DISSOLVED SOLIDS)	338.6	mg/L	189	592	172	322	1,140	363	308	528	386	193	805	207	142	76	213	209	1,030	622	542
TETRACHLOROETHENE	1*	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
TOC (TOTAL ORGANIC CARBON)	1.06	mg/L	0.66	1.3	0.93	0.97	2.5	0.92	1.1	1.1	0.98	<0.5	0.65	1.6	0.57	0.85	0.60	0.56	0.89	1.6	0.89
TOLUENE	1*	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
TOTAL PHENOLICS	0.005*	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
trans 1,2-DICHLOROETHENE	1*	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
TRICHLOROETHENE	1*	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
TURBIDITY	1.792	NTU	0.27	0.12	0.15	0.26	4.64	0.15	0.29	0.50	0.17	0.14	5.15	126	24.8	95.5	3.13	0.16	1.40	0.44	1.98
VINYL CHLORIDE	1*	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
XYLENES (TOTAL)	3*	µg/L	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0

Notes:
 Gray text indicates a parameter non-detection.
 Shaded text indicates a background standard exceedance.
 * Reporting limit substituted for background standard due to lack of historical detections in the upgradient well.

Table 2. LCSWMA Frey Farm Landfill Form 52 Groundwater Monitoring Well Background Standard Comparisons - 3rd Quarter 2019

Parameter	FFLF Background Standard	Units	3044 RIVER RD	3052 RIVER RD	3056 RIVER RD	3060 RIVER RD	3076 RIVER RD	3079 RIVER RD	3088 RIVER RD	3100 RIVER RD	3106 RIVER RD	3125 RIVER RD
ALKALINITY	147.9	mg/L	6	6			7	23	150	7	11	224
AMMONIA-NITROGEN	0.313	mg/L	0.24	0.19	0.17		0.18	0.25	0.22	0.29		
BICARBONATE ALKALINITY	143.2	mg/L	6	6			7	23	150	7	11	224
CALCIUM, DISSOLVED	28.22	mg/L	14.1	16.8	10.6	8.6	16.7	9.9		13.0	22.9	0.77
CALCIUM, TOTAL	73.74	mg/L	13.2	16.5	10.2	8.9	15.7	10.0	0.10	12.5	21.3	0.86
CHLORIDE	30.97	mg/L	22.7	22.3	26.3	20.3	57.1	35.9	235	42.7	137	95.9
IRON, TOTAL	0.185	mg/L				0.030	0.030				0.140	
MAGNESIUM, DISSOLVED	10.84	mg/L	10.5	8.8	13.7	10.3	8.6	5.5		6.2	15.9	0.12
MAGNESIUM, TOTAL	10.17	mg/L	10.1	8.6	13.5	10.5	8.2	5.4		6.1	14.7	0.12
MANGANESE, DISSOLVED	0.531	mg/L	0.030	0.030	0.130	0.100	0.200	0.410		0.010	0.090	
MANGANESE, TOTAL	0.329	mg/L	0.020	0.030	0.130	0.110	0.190	0.410		0.010	0.090	
NITRATE-NITROGEN	28.82	mg/L	19.4	18.7	20.0	14.5	10.4		6.6	4.9	13.2	5.7
pH-LAB	NA	S.U.	6.20	6.13	5.18	5.39	6.16	6.67	7.24	6.18	5.96	7.40
POTASSIUM, DISSOLVED	1.685	mg/L	1.6	1.8	2.1	1.9	3.5	2.1	1.9	1.5	2.0	3.1
POTASSIUM, TOTAL	10.69	mg/L	1.6	1.7	2.1	2.0	3.4	2.0	2.0	1.5	2.0	3.2
SODIUM, DISSOLVED	21.81	mg/L	8.5	8.0	8.7	8.1	25.9	14.5	216	18.4	56.5	161
SODIUM, TOTAL	22.3	mg/L	8.2	7.8	8.4	9.0	24.6	14.3	198	17.1	54.5	158
SPEC. COND., LAB	582.1	µmhos/cm	213	211	237	187	291	181	1,090	212	546	723
SULFATE	59.97	mg/L		2.1		9.3	12.7	15.4		14.5	8.5	13.7
TDS (TOT. DISSOLVED SOLIDS)	338.6	mg/L	164	153	186	152	188	111	602	133	347	411
TOC (TOTAL ORGANIC CARBON)	1.06	mg/L					0.75				0.68	1.10
TURBIDITY	1.792	NTU	0.17	0.20	0.17	0.57	0.21	0.18	0.12	0.11	0.18	0.15

Notes:

Blank cells indicate parameter not detected by laboratory.

Shaded text indicates exceedance of a FFLF statistical background standard.

ATTACHMENT 1

BACKGROUND UPPER PREDICTION LIMITS



LCSWMA Frey Farm Landfill			
3rd Quarter 2019 - Background Upper Prediction Limits (MP-2)			
Parameter	Distribution	Upper Prediction Limit	Unit
1,1,1-Trichloroethane	NA	1*	µg/L
1,1-Dichloroethane	NA	1*	µg/L
1,1-Dichloroethene	NA	1*	µg/L
1,2-Dibromoethane	NA	1*	µg/L
1,2-Dichloroethane	NA	1*	µg/L
Alkalinity	No Distribution	147.9	mg/L
Ammonia-Nitrogen	Normal	0.313	mg/L
Benzene	NA	1*	µg/L
Bicarbonate Alkalinity	No Distribution	143.2	mg/L
Calcium, Dissolved	Normal	28.22	mg/L
Calcium, Total	No Distribution	73.74	mg/L
Chloride	Normal	30.97	mg/L
Cis 1,2-Dichloroethene	NA	1*	µg/L
Chemical Oxygen Demand	NA	15*	mg/L
Ethylbenzene	NA	1*	µg/L
Fluoride	No Distribution	0.5	mg/L
Iron, Dissolved	NA	0.066*	mg/L
Iron, Total	Lognormal	0.185	mg/L
Magnesium, Dissolved	Normal	10.84	mg/L
Magnesium, Total	Normal	10.17	mg/L
Manganese, Dissolved	Gamma	0.531	mg/L
Manganese, Total	Normal	0.329	mg/L
Methylene Chloride	NA	1*	µg/L
Nitrate-Nitrogen	No Distribution	28.82	mg/L
pH-Lab	NA	None**	S.U.
Potassium, Dissolved	Normal	1.685	mg/L
Potassium, Total	No Distribution	10.69	mg/L
Sodium, Dissolved	Normal	21.81	mg/L
Sodium, Total	Normal	22.3	mg/L
Spec. Cond., Lab	No Distribution	582.1	µmhos/cm
Sulfate	No Distribution	59.97	mg/L
Total Dissolved Solids	Normal	338.6	mg/L
Tetrachloroethene	NA	1*	µg/L
Total Organic Carbon	Normal	1.06	mg/L
Toluene	NA	1*	µg/L
Total Phenolics	NA	0.005*	mg/L
Trans 1,2-Dichloroethene	NA	1*	µg/L
Trichloroethene	NA	1*	µg/L
Turbidity	Lognormal	1.792	NTU
Vinyl Chloride	NA	1*	µg/L
Total Xylenes	NA	3*	µg/L

Notes:

"NA" denotes parameter not detected or not enough detections in MP-2 over course of historical data to develop tolerance limits.

* Reporting limit substituted for background standard due to lack of historical detections.

** One-sided background standards are not appropriate for pH. Other analysis used in report.

ATTACHMENT 2

STATISTICAL CALCULATION SHEETS



	A	B	C	D	E	F	G	H	I	J	K	L
1	Background Statistics for Data Sets with Non-Detects											
2	User Selected Options											
3	Date/Time of Computation			ProUCL 5.11/2/2020 10:48:13 AM								
4	From File			MP-2 ProUCL Entry.xls								
5	Full Precision			OFF								
6	Confidence Coefficient			95%								
7	Coverage			95%								
8	Different or Future K Observations			1								
9	Number of Bootstrap Operations			2000								
10												
11	1,1,1-TRICHLOROETHANE (ug/L)											
12												
13	General Statistics											
14	Total Number of Observations				43		Number of Missing Observations				0	
15	Number of Distinct Observations				1							
16	Number of Detects				0		Number of Non-Detects				43	
17	Number of Distinct Detects				0		Number of Distinct Non-Detects				1	
18	Minimum Detect				N/A		Minimum Non-Detect				1	
19	Maximum Detect				N/A		Maximum Non-Detect				1	
20	Variance Detected				N/A		Percent Non-Detects				100%	
21	Mean Detected				N/A		SD Detected				N/A	
22	Mean of Detected Logged Data				N/A		SD of Detected Logged Data				N/A	
23												
24	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
25	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
26	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
27												
28	The data set for variable 1,1,1-TRICHLOROETHANE (ug/L) was not processed!											
29												
30												
31	1,1-DICHLOROETHANE (ug/L)											
32												
33	General Statistics											
34	Total Number of Observations				43		Number of Missing Observations				0	
35	Number of Distinct Observations				1							
36	Number of Detects				0		Number of Non-Detects				43	
37	Number of Distinct Detects				0		Number of Distinct Non-Detects				1	
38	Minimum Detect				N/A		Minimum Non-Detect				1	
39	Maximum Detect				N/A		Maximum Non-Detect				1	
40	Variance Detected				N/A		Percent Non-Detects				100%	
41	Mean Detected				N/A		SD Detected				N/A	
42	Mean of Detected Logged Data				N/A		SD of Detected Logged Data				N/A	
43												
44	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
45	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
46	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
47												
48	The data set for variable 1,1-DICHLOROETHANE (ug/L) was not processed!											
49												
50												

	A	B	C	D	E	F	G	H	I	J	K	L
51	1,1-DICHLOROETHENE (ug/L)											
52												
53	General Statistics											
54	Total Number of Observations				43		Number of Missing Observations				0	
55	Number of Distinct Observations				1							
56	Number of Detects				0		Number of Non-Detects				43	
57	Number of Distinct Detects				0		Number of Distinct Non-Detects				1	
58	Minimum Detect				N/A		Minimum Non-Detect				1	
59	Maximum Detect				N/A		Maximum Non-Detect				1	
60	Variance Detected				N/A		Percent Non-Detects				100%	
61	Mean Detected				N/A		SD Detected				N/A	
62	Mean of Detected Logged Data				N/A		SD of Detected Logged Data				N/A	
63												
64	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
65	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
66	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
67												
68	The data set for variable 1,1-DICHLOROETHENE (ug/L) was not processed!											
69												
70												
71	1,2-DIBROMOETHANE (ug/L)											
72												
73	General Statistics											
74	Total Number of Observations				43		Number of Missing Observations				0	
75	Number of Distinct Observations				1							
76	Number of Detects				0		Number of Non-Detects				43	
77	Number of Distinct Detects				0		Number of Distinct Non-Detects				1	
78	Minimum Detect				N/A		Minimum Non-Detect				1	
79	Maximum Detect				N/A		Maximum Non-Detect				1	
80	Variance Detected				N/A		Percent Non-Detects				100%	
81	Mean Detected				N/A		SD Detected				N/A	
82	Mean of Detected Logged Data				N/A		SD of Detected Logged Data				N/A	
83												
84	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
85	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
86	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
87												
88	The data set for variable 1,2-DIBROMOETHANE (ug/L) was not processed!											
89												
90												
91	1,2-DICHLOROETHANE											
92												
93	General Statistics											
94	Total Number of Observations				43		Number of Missing Observations				0	
95	Number of Distinct Observations				1							
96	Number of Detects				0		Number of Non-Detects				43	
97	Number of Distinct Detects				0		Number of Distinct Non-Detects				1	
98	Minimum Detect				N/A		Minimum Non-Detect				1	
99	Maximum Detect				N/A		Maximum Non-Detect				1	
100	Variance Detected				N/A		Percent Non-Detects				100%	

	A	B	C	D	E	F	G	H	I	J	K	L
101	Mean Detected					N/A	SD Detected					N/A
102	Mean of Detected Logged Data					N/A	SD of Detected Logged Data					N/A
103												
104	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
105	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
106	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
107												
108	The data set for variable 1,2-DICHLOROETHANE was not processed!											
109												
110												
111	ALKALINITY (mg/L)											
112												
113	General Statistics											
114	Total Number of Observations					42	Number of Missing Observations					0
115	Number of Distinct Observations					14						
116	Number of Detects					20	Number of Non-Detects					22
117	Number of Distinct Detects					14	Number of Distinct Non-Detects					1
118	Minimum Detect					5	Minimum Non-Detect					5
119	Maximum Detect					182	Maximum Non-Detect					5
120	Variance Detected					3029	Percent Non-Detects					52.38%
121	Mean Detected					42.2	SD Detected					55.03
122	Mean of Detected Logged Data					2.904	SD of Detected Logged Data					1.329
123												
124	Critical Values for Background Threshold Values (BTVs)											
125	Tolerance Factor K (For UTL)					2.104	d2max (for USL)					2.887
126												
127	Normal GOF Test on Detects Only											
128	Shapiro Wilk Test Statistic					0.725	Shapiro Wilk GOF Test					
129	5% Shapiro Wilk Critical Value					0.905	Data Not Normal at 5% Significance Level					
130	Lilliefors Test Statistic					0.283	Lilliefors GOF Test					
131	5% Lilliefors Critical Value					0.192	Data Not Normal at 5% Significance Level					
132	Data Not Normal at 5% Significance Level											
133												
134	Kaplan Meier (KM) Background Statistics Assuming Normal Distribution											
135	KM Mean					22.71	KM SD					41.42
136	95% UTL95% Coverage					109.8	95% KM UPL (t)					93.24
137	90% KM Percentile (z)					75.79	95% KM Percentile (z)					90.84
138	99% KM Percentile (z)					119.1	95% KM USL					142.3
139												
140	DL/2 Substitution Background Statistics Assuming Normal Distribution											
141	Mean					21.4	SD					42.5
142	95% UTL95% Coverage					110.8	95% UPL (t)					93.77
143	90% Percentile (z)					75.87	95% Percentile (z)					91.31
144	99% Percentile (z)					120.3	95% USL					144.1
145	DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons											
146												
147	Gamma GOF Tests on Detected Observations Only											
148	A-D Test Statistic					1.479	Anderson-Darling GOF Test					
149	5% A-D Critical Value					0.782	Data Not Gamma Distributed at 5% Significance Level					
150	K-S Test Statistic					0.263	Kolmogorov-Smirnov GOF					

	A	B	C	D	E	F	G	H	I	J	K	L	
151	5% K-S Critical Value				0.202	Data Not Gamma Distributed at 5% Significance Level							
152	Data Not Gamma Distributed at 5% Significance Level												
153													
154	Gamma Statistics on Detected Data Only												
155	k hat (MLE)				0.718	k star (bias corrected MLE)				0.644			
156	Theta hat (MLE)				58.77	Theta star (bias corrected MLE)				65.56			
157	nu hat (MLE)				28.72	nu star (bias corrected)				25.75			
158	MLE Mean (bias corrected)				42.2								
159	MLE Sd (bias corrected)				52.6	95% Percentile of Chisquare (2kstar)				4.516			
160													
161	Gamma ROS Statistics using Imputed Non-Detects												
162	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs												
163	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)												
164	For such situations, GROS method may yield incorrect values of UCLs and BTVs												
165	This is especially true when the sample size is small.												
166	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates												
167	Minimum				0.01	Mean				20.1			
168	Maximum				182	Median				0.01			
169	SD				43.11	CV				2.145			
170	k hat (MLE)				0.185	k star (bias corrected MLE)				0.188			
171	Theta hat (MLE)				108.7	Theta star (bias corrected MLE)				107.2			
172	nu hat (MLE)				15.53	nu star (bias corrected)				15.75			
173	MLE Mean (bias corrected)				20.1	MLE Sd (bias corrected)				46.42			
174	95% Percentile of Chisquare (2kstar)				1.964	90% Percentile				60.72			
175	95% Percentile				105.3	99% Percentile				229.3			
176	The following statistics are computed using Gamma ROS Statistics on Imputed Data												
177	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods												
178					WH	HW					WH	HW	
179	95% Approx. Gamma UTL with 95% Coverage				122.8	146	95% Approx. Gamma UPL				79.98	85.81	
180	95% Gamma USL				246	349.2							
181													
182	Estimates of Gamma Parameters using KM Estimates												
183	Mean (KM)				22.71	SD (KM)				41.42			
184	Variance (KM)				1715	SE of Mean (KM)				6.557			
185	k hat (KM)				0.301	k star (KM)				0.295			
186	nu hat (KM)				25.27	nu star (KM)				24.8			
187	theta hat (KM)				75.51	theta star (KM)				76.95			
188	80% gamma percentile (KM)				34.69	90% gamma percentile (KM)				67.12			
189	95% gamma percentile (KM)				104.4	99% gamma percentile (KM)				201.6			
190													
191	The following statistics are computed using gamma distribution and KM estimates												
192	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods												
193					WH	HW					WH	HW	
194	95% Approx. Gamma UTL with 95% Coverage				97.28	96.11	95% Approx. Gamma UPL				71.83	68.97	
195	95% KM Gamma Percentile				68.57	65.59	95% Gamma USL				163.1	171.5	
196													
197	Lognormal GOF Test on Detected Observations Only												
198	Shapiro Wilk Test Statistic				0.844	Shapiro Wilk GOF Test							
199	5% Shapiro Wilk Critical Value				0.905	Data Not Lognormal at 5% Significance Level							
200	Lilliefors Test Statistic				0.225	Lilliefors GOF Test							

	A	B	C	D	E	F	G	H	I	J	K	L
201	5% Lilliefors Critical Value				0.192		Data Not Lognormal at 5% Significance Level					
202	Data Not Lognormal at 5% Significance Level											
203												
204	Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects											
205	Mean in Original Scale				20.51		Mean in Log Scale				0.936	
206	SD in Original Scale				42.92		SD in Log Scale				2.314	
207	95% UTL95% Coverage				331.6		95% BCA UTL95% Coverage				178.6	
208	95% Bootstrap (%) UTL95% Coverage				178.6		95% UPL (t)				131.2	
209	90% Percentile (z)				49.49		95% Percentile (z)				114.7	
210	99% Percentile (z)				555.3		95% USL				2035	
211												
212	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution											
213	KM Mean of Logged Data				2.226		95% KM UTL (Lognormal)95% Coverage				94.26	
214	KM SD of Logged Data				1.103		95% KM UPL (Lognormal)				60.58	
215	95% KM Percentile Lognormal (z)				56.83		95% KM USL (Lognormal)				223.8	
216												
217	Background DL/2 Statistics Assuming Lognormal Distribution											
218	Mean in Original Scale				21.4		Mean in Log Scale				1.863	
219	SD in Original Scale				42.5		SD in Log Scale				1.352	
220	95% UTL95% Coverage				110.7		95% UPL (t)				64.37	
221	90% Percentile (z)				36.42		95% Percentile (z)				59.52	
222	99% Percentile (z)				149.6		95% USL				319.3	
223	DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.											
224												
225	Nonparametric Distribution Free Background Statistics											
226	Data do not follow a Discernible Distribution (0.05)											
227												
228	Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)											
229	Order of Statistic, r				42		95% UTL with95% Coverage				182	
230	Approx, f used to compute achieved CC				2.211		Approximate Actual Confidence Coefficient achieved by UTL				0.884	
231	Approximate Sample Size needed to achieve specified CC				59		95% UPL				147.9	
232	95% USL				182		95% KM Chebyshev UPL				205.4	
233												
234	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
235	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
236	and consists of observations collected from clean unimpacted locations.											
237	The use of USL tends to provide a balance between false positives and false negatives provided the data											
238	represents a background data set and when many onsite observations need to be compared with the BTV.											
239												
240	AMMONIA-NITROGEN (mg/L)											
241												
242	General Statistics											
243	Total Number of Observations				43		Number of Missing Observations				0	
244	Number of Distinct Observations				7							
245	Number of Detects				7		Number of Non-Detects				36	
246	Number of Distinct Detects				7		Number of Distinct Non-Detects				1	
247	Minimum Detect				0.1		Minimum Non-Detect				0.1	
248	Maximum Detect				0.63		Maximum Non-Detect				0.1	
249	Variance Detected				0.0395		Percent Non-Detects				83.72%	
250	Mean Detected				0.304		SD Detected				0.199	

	A	B	C	D	E	F	G	H	I	J	K	L
251	Mean of Detected Logged Data					-1.389	SD of Detected Logged Data					0.699
252												
253	Critical Values for Background Threshold Values (BTVs)											
254	Tolerance Factor K (For UTL)				2.097	d2max (for USL)					2.897	
255												
256	Normal GOF Test on Detects Only											
257	Shapiro Wilk Test Statistic				0.904	Shapiro Wilk GOF Test						
258	5% Shapiro Wilk Critical Value				0.803	Detected Data appear Normal at 5% Significance Level						
259	Lilliefors Test Statistic				0.254	Lilliefors GOF Test						
260	5% Lilliefors Critical Value				0.304	Detected Data appear Normal at 5% Significance Level						
261	Detected Data appear Normal at 5% Significance Level											
262												
263	Kaplan Meier (KM) Background Statistics Assuming Normal Distribution											
264	KM Mean			0.133	KM SD					0.106		
265	95% UTL95% Coverage			0.355	95% KM UPL (t)					0.313		
266	90% KM Percentile (z)			0.269	95% KM Percentile (z)					0.307		
267	99% KM Percentile (z)			0.379	95% KM USL					0.44		
268												
269	DL/2 Substitution Background Statistics Assuming Normal Distribution											
270	Mean			0.0914	SD					0.121		
271	95% UTL95% Coverage			0.345	95% UPL (t)					0.297		
272	90% Percentile (z)			0.247	95% Percentile (z)					0.291		
273	99% Percentile (z)			0.373	95% USL					0.442		
274	DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons											
275												
276	Gamma GOF Tests on Detected Observations Only											
277	A-D Test Statistic			0.319	Anderson-Darling GOF Test							
278	5% A-D Critical Value			0.713	Detected data appear Gamma Distributed at 5% Significance Level							
279	K-S Test Statistic			0.212	Kolmogorov-Smirnov GOF							
280	5% K-S Critical Value			0.314	Detected data appear Gamma Distributed at 5% Significance Level							
281	Detected data appear Gamma Distributed at 5% Significance Level											
282												
283	Gamma Statistics on Detected Data Only											
284	k hat (MLE)			2.665	k star (bias corrected MLE)					1.618		
285	Theta hat (MLE)			0.114	Theta star (bias corrected MLE)					0.188		
286	nu hat (MLE)			37.3	nu star (bias corrected)					22.65		
287	MLE Mean (bias corrected)			0.304								
288	MLE Sd (bias corrected)			0.239	95% Percentile of Chisquare (2kstar)					8.22		
289												
290	Gamma ROS Statistics using Imputed Non-Detects											
291	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
292	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)											
293	For such situations, GROS method may yield incorrect values of UCLs and BTVs											
294	This is especially true when the sample size is small.											
295	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
296	Minimum			0.01	Mean					0.0579		
297	Maximum			0.63	Median					0.01		
298	SD			0.133	CV					2.299		
299	k hat (MLE)			0.513	k star (bias corrected MLE)					0.493		
300	Theta hat (MLE)			0.113	Theta star (bias corrected MLE)					0.117		

	A	B	C	D	E	F	G	H	I	J	K	L
301					nu hat (MLE)	44.14				nu star (bias corrected)		42.39
302					MLE Mean (bias corrected)	0.0579				MLE Sd (bias corrected)		0.0825
303					95% Percentile of Chisquare (2kstar)	3.806				90% Percentile		0.157
304					95% Percentile	0.224				99% Percentile		0.387
305	The following statistics are computed using Gamma ROS Statistics on Imputed Data											
306	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods											
307					WH	HW				WH	HW	
308					95% Approx. Gamma UTL with 95% Coverage	0.264	0.253			95% Approx. Gamma UPL	0.189	0.176
309					95% Gamma USL	0.469	0.486					
310												
311	Estimates of Gamma Parameters using KM Estimates											
312					Mean (KM)	0.133				SD (KM)		0.106
313					Variance (KM)	0.0112				SE of Mean (KM)		0.0174
314					k hat (KM)	1.586				k star (KM)		1.491
315					nu hat (KM)	136.4				nu star (KM)		128.2
316					theta hat (KM)	0.084				theta star (KM)		0.0894
317					80% gamma percentile (KM)	0.206				90% gamma percentile (KM)		0.278
318					95% gamma percentile (KM)	0.348				99% gamma percentile (KM)		0.505
319												
320	The following statistics are computed using gamma distribution and KM estimates											
321	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods											
322					WH	HW				WH	HW	
323					95% Approx. Gamma UTL with 95% Coverage	0.308	0.302			95% Approx. Gamma UPL	0.263	0.257
324					95% KM Gamma Percentile	0.257	0.251			95% Gamma USL	0.412	0.409
325												
326	Lognormal GOF Test on Detected Observations Only											
327					Shapiro Wilk Test Statistic	0.935				Shapiro Wilk GOF Test		
328					5% Shapiro Wilk Critical Value	0.803				Detected Data appear Lognormal at 5% Significance Level		
329					Lilliefors Test Statistic	0.19				Lilliefors GOF Test		
330					5% Lilliefors Critical Value	0.304				Detected Data appear Lognormal at 5% Significance Level		
331	Detected Data appear Lognormal at 5% Significance Level											
332												
333	Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects											
334					Mean in Original Scale	0.065				Mean in Log Scale		-4.229
335					SD in Original Scale	0.132				SD in Log Scale		1.853
336					95% UTL95% Coverage	0.709				95% BCA UTL95% Coverage		0.588
337					95% Bootstrap (%) UTL95% Coverage	0.613				95% UPL (t)		0.341
338					90% Percentile (z)	0.157				95% Percentile (z)		0.307
339					99% Percentile (z)	1.085				95% USL		3.122
340												
341	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution											
342					KM Mean of Logged Data	-2.154				95% KM UTL (Lognormal)95% Coverage		0.284
343					KM SD of Logged Data	0.426				95% KM UPL (Lognormal)		0.24
344					95% KM Percentile Lognormal (z)	0.234				95% KM USL (Lognormal)		0.399
345												
346	Background DL/2 Statistics Assuming Lognormal Distribution											
347					Mean in Original Scale	0.0914				Mean in Log Scale		-2.734
348					SD in Original Scale	0.121				SD in Log Scale		0.656
349					95% UTL95% Coverage	0.257				95% UPL (t)		0.198
350					90% Percentile (z)	0.15				95% Percentile (z)		0.191

	A	B	C	D	E	F	G	H	I	J	K	L
351	99% Percentile (z)				0.299					95% USL	0.434	
352	DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.											
353												
354	Nonparametric Distribution Free Background Statistics											
355	Data appear to follow a Discernible Distribution at 5% Significance Level											
356												
357	Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)											
358	Order of Statistic, r				43	95% UTL with 95% Coverage				0.63		
359	Approx, f used to compute achieved CC				2.263	Approximate Actual Confidence Coefficient achieved by UTL				0.89		
360	Approximate Sample Size needed to achieve specified CC				59	95% UPL				0.45		
361	95% USL				0.63	95% KM Chebyshev UPL				0.6		
362												
363	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
364	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
365	and consists of observations collected from clean unimpacted locations.											
366	The use of USL tends to provide a balance between false positives and false negatives provided the data											
367	represents a background data set and when many onsite observations need to be compared with the BTV.											
368												
369	BENZENE (ug/L)											
370												
371	General Statistics											
372	Total Number of Observations				43	Number of Missing Observations				0		
373	Number of Distinct Observations				1							
374	Number of Detects				0	Number of Non-Detects				43		
375	Number of Distinct Detects				0	Number of Distinct Non-Detects				1		
376	Minimum Detect				N/A	Minimum Non-Detect				1		
377	Maximum Detect				N/A	Maximum Non-Detect				1		
378	Variance Detected				N/A	Percent Non-Detects				100%		
379	Mean Detected				N/A	SD Detected				N/A		
380	Mean of Detected Logged Data				N/A	SD of Detected Logged Data				N/A		
381												
382	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
383	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
384	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
385												
386	The data set for variable BENZENE (ug/L) was not processed!											
387												
388												
389	BICARBONATE ALKALINITY (mg/L)											
390												
391	General Statistics											
392	Total Number of Observations				43	Number of Missing Observations				0		
393	Number of Distinct Observations				14							
394	Number of Detects				20	Number of Non-Detects				23		
395	Number of Distinct Detects				14	Number of Distinct Non-Detects				1		
396	Minimum Detect				5	Minimum Non-Detect				5		
397	Maximum Detect				182	Maximum Non-Detect				5		
398	Variance Detected				2624	Percent Non-Detects				53.49%		
399	Mean Detected				36.65	SD Detected				51.23		
400	Mean of Detected Logged Data				2.823	SD of Detected Logged Data				1.241		

	A	B	C	D	E	F	G	H	I	J	K	L
401												
402	Critical Values for Background Threshold Values (BTVs)											
403	Tolerance Factor K (For UTL)				2.097		d2max (for USL)				2.897	
404												
405	Normal GOF Test on Detects Only											
406	Shapiro Wilk Test Statistic				0.673		Shapiro Wilk GOF Test					
407	5% Shapiro Wilk Critical Value				0.905		Data Not Normal at 5% Significance Level					
408	Lilliefors Test Statistic				0.268		Lilliefors GOF Test					
409	5% Lilliefors Critical Value				0.192		Data Not Normal at 5% Significance Level					
410	Data Not Normal at 5% Significance Level											
411												
412	Kaplan Meier (KM) Background Statistics Assuming Normal Distribution											
413	KM Mean				19.72		KM SD				37.53	
414	95% UTL95% Coverage				98.43		95% KM UPL (t)				83.58	
415	90% KM Percentile (z)				67.82		95% KM Percentile (z)				81.46	
416	99% KM Percentile (z)				107		95% KM USL				128.5	
417												
418	DL/2 Substitution Background Statistics Assuming Normal Distribution											
419	Mean				18.38		SD				38.52	
420	95% UTL95% Coverage				99.18		95% UPL (t)				83.93	
421	90% Percentile (z)				67.76		95% Percentile (z)				81.75	
422	99% Percentile (z)				108		95% USL				130	
423	DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons											
424												
425	Gamma GOF Tests on Detected Observations Only											
426	A-D Test Statistic				1.343		Anderson-Darling GOF Test					
427	5% A-D Critical Value				0.779		Data Not Gamma Distributed at 5% Significance Level					
428	K-S Test Statistic				0.251		Kolmogorov-Smirnov GOF					
429	5% K-S Critical Value				0.201		Data Not Gamma Distributed at 5% Significance Level					
430	Data Not Gamma Distributed at 5% Significance Level											
431												
432	Gamma Statistics on Detected Data Only											
433	k hat (MLE)				0.767		k star (bias corrected MLE)				0.685	
434	Theta hat (MLE)				47.81		Theta star (bias corrected MLE)				53.51	
435	nu hat (MLE)				30.66		nu star (bias corrected)				27.4	
436	MLE Mean (bias corrected)				36.65							
437	MLE Sd (bias corrected)				44.28		95% Percentile of Chisquare (2kstar)				4.699	
438												
439	Gamma ROS Statistics using Imputed Non-Detects											
440	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
441	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)											
442	For such situations, GROS method may yield incorrect values of UCLs and BTVs											
443	This is especially true when the sample size is small.											
444	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
445	Minimum				0.01		Mean				17.05	
446	Maximum				182		Median				0.01	
447	SD				39.1		CV				2.293	
448	k hat (MLE)				0.187		k star (bias corrected MLE)				0.189	
449	Theta hat (MLE)				91.38		Theta star (bias corrected MLE)				90.18	
450	nu hat (MLE)				16.05		nu star (bias corrected)				16.26	

	A	B	C	D	E	F	G	H	I	J	K	L		
451	MLE Mean (bias corrected)					17.05	MLE Sd (bias corrected)					39.21		
452	95% Percentile of Chisquare (2kstar)					1.977	90% Percentile					51.52		
453	95% Percentile					89.13	99% Percentile					193.6		
454	The following statistics are computed using Gamma ROS Statistics on Imputed Data													
455	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods													
456						WH	HW						WH	HW
457	95% Approx. Gamma UTL with 95% Coverage					102.6	121.4	95% Approx. Gamma UPL					67.15	71.87
458	95% Gamma USL					208.2	295							
459														
460	Estimates of Gamma Parameters using KM Estimates													
461	Mean (KM)					19.72	SD (KM)					37.53		
462	Variance (KM)					1409	SE of Mean (KM)					5.872		
463	k hat (KM)					0.276	k star (KM)					0.272		
464	nu hat (KM)					23.74	nu star (KM)					23.42		
465	theta hat (KM)					71.43	theta star (KM)					72.42		
466	80% gamma percentile (KM)					29.45	90% gamma percentile (KM)					58.77		
467	95% gamma percentile (KM)					93.01	99% gamma percentile (KM)					183.1		
468														
469	The following statistics are computed using gamma distribution and KM estimates													
470	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods													
471						WH	HW						WH	HW
472	95% Approx. Gamma UTL with 95% Coverage					80.58	78.84	95% Approx. Gamma UPL					60.33	57.61
473	95% KM Gamma Percentile					57.75	54.96	95% Gamma USL					134.4	139.1
474														
475	Lognormal GOF Test on Detected Observations Only													
476	Shapiro Wilk Test Statistic					0.864	Shapiro Wilk GOF Test							
477	5% Shapiro Wilk Critical Value					0.905	Data Not Lognormal at 5% Significance Level							
478	Lilliefors Test Statistic					0.212	Lilliefors GOF Test							
479	5% Lilliefors Critical Value					0.192	Data Not Lognormal at 5% Significance Level							
480	Data Not Lognormal at 5% Significance Level													
481														
482	Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects													
483	Mean in Original Scale					17.5	Mean in Log Scale					0.904		
484	SD in Original Scale					38.91	SD in Log Scale					2.205		
485	95% UTL95% Coverage					251.7	95% BCA UTL95% Coverage					154		
486	95% Bootstrap (%) UTL95% Coverage					173.8	95% UPL (t)					105.2		
487	90% Percentile (z)					41.68	95% Percentile (z)					92.84		
488	99% Percentile (z)					417.1	95% USL					1468		
489														
490	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution													
491	KM Mean of Logged Data					2.174	95% KM UTL (Lognormal)95% Coverage					75.16		
492	KM SD of Logged Data					1.023	95% KM UPL (Lognormal)					50.13		
493	95% KM Percentile Lognormal (z)					47.31	95% KM USL (Lognormal)					170.4		
494														
495	Background DL/2 Statistics Assuming Lognormal Distribution													
496	Mean in Original Scale					18.38	Mean in Log Scale					1.803		
497	SD in Original Scale					38.52	SD in Log Scale					1.274		
498	95% UTL95% Coverage					87.75	95% UPL (t)					53		
499	90% Percentile (z)					31.05	95% Percentile (z)					49.32		
500	99% Percentile (z)					117.5	95% USL					243.1		

	A	B	C	D	E	F	G	H	I	J	K	L
501	DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.											
502												
503	Nonparametric Distribution Free Background Statistics											
504	Data do not follow a Discernible Distribution (0.05)											
505												
506	Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)											
507	Order of Statistic, r					43	95% UTL with 95% Coverage					182
508	Approx, f used to compute achieved CC					2.263	Approximate Actual Confidence Coefficient achieved by UTL					0.89
509	Approximate Sample Size needed to achieve specified CC					59	95% UPL					143.2
510	95% USL					182	95% KM Chebyshev UPL					185.2
511												
512	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
513	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
514	and consists of observations collected from clean unimpacted locations.											
515	The use of USL tends to provide a balance between false positives and false negatives provided the data											
516	represents a background data set and when many onsite observations need to be compared with the BTV.											
517												
518	CALCIUM, DISSOLVED (mg/L)											
519												
520	General Statistics											
521	Total Number of Observations					10	Number of Distinct Observations					9
522	Minimum					18.3	First Quartile					21.3
523	Second Largest					26.1	Median					23.4
524	Maximum					26.6	Third Quartile					24.48
525	Mean					22.83	SD					2.803
526	Coefficient of Variation					0.123	Skewness					-0.371
527	Mean of logged Data					3.121	SD of logged Data					0.126
528												
529	Critical Values for Background Threshold Values (BTVs)											
530	Tolerance Factor K (For UTL)					2.911	d2max (for USL)					2.176
531												
532	Normal GOF Test											
533	Shapiro Wilk Test Statistic					0.945	Shapiro Wilk GOF Test					
534	5% Shapiro Wilk Critical Value					0.842	Data appear Normal at 5% Significance Level					
535	Lilliefors Test Statistic					0.167	Lilliefors GOF Test					
536	5% Lilliefors Critical Value					0.262	Data appear Normal at 5% Significance Level					
537	Data appear Normal at 5% Significance Level											
538												
539	Background Statistics Assuming Normal Distribution											
540	95% UTL with 95% Coverage					30.99	90% Percentile (z)					26.42
541	95% UPL (t)					28.22	95% Percentile (z)					27.44
542	95% USL					28.93	99% Percentile (z)					29.35
543												
544	Gamma GOF Test											
545	A-D Test Statistic					0.323	Anderson-Darling Gamma GOF Test					
546	5% A-D Critical Value					0.724	Detected data appear Gamma Distributed at 5% Significance Level					
547	K-S Test Statistic					0.184	Kolmogorov-Smirnov Gamma GOF Test					
548	5% K-S Critical Value					0.266	Detected data appear Gamma Distributed at 5% Significance Level					
549	Detected data appear Gamma Distributed at 5% Significance Level											
550												

	A	B	C	D	E	F	G	H	I	J	K	L
551	Gamma Statistics											
552	k hat (MLE)				71.14		k star (bias corrected MLE)				49.87	
553	Theta hat (MLE)				0.321		Theta star (bias corrected MLE)				0.458	
554	nu hat (MLE)				1423		nu star (bias corrected)				997.4	
555	MLE Mean (bias corrected)				22.83		MLE Sd (bias corrected)				3.233	
556												
557	Background Statistics Assuming Gamma Distribution											
558	95% Wilson Hilferty (WH) Approx. Gamma UPL				28.64		90% Percentile				27.06	
559	95% Hawkins Wixley (HW) Approx. Gamma UPL				28.7		95% Percentile				28.39	
560	95% WH Approx. Gamma UTL with		95% Coverage		32.05		99% Percentile				31.02	
561	95% HW Approx. Gamma UTL with		95% Coverage		32.21							
562	95% WH USL				29.49		95% HW USL				29.58	
563												
564	Lognormal GOF Test											
565	Shapiro Wilk Test Statistic				0.933		Shapiro Wilk Lognormal GOF Test					
566	5% Shapiro Wilk Critical Value				0.842		Data appear Lognormal at 5% Significance Level					
567	Lilliefors Test Statistic				0.186		Lilliefors Lognormal GOF Test					
568	5% Lilliefors Critical Value				0.262		Data appear Lognormal at 5% Significance Level					
569	Data appear Lognormal at 5% Significance Level											
570												
571	Background Statistics assuming Lognormal Distribution											
572	95% UTL with		95% Coverage		32.75		90% Percentile (z)				26.65	
573	95% UPL (t)				28.9		95% Percentile (z)				27.91	
574	95% USL				29.84		99% Percentile (z)				30.42	
575												
576	Nonparametric Distribution Free Background Statistics											
577	Data appear Normal at 5% Significance Level											
578												
579	Nonparametric Upper Limits for Background Threshold Values											
580	Order of Statistic, r				10		95% UTL with 95% Coverage				26.6	
581	Approx, f used to compute achieved CC				0.526		Approximate Actual Confidence Coefficient achieved by UTL				0.401	
582							Approximate Sample Size needed to achieve specified CC				59	
583	95% Percentile Bootstrap UTL with		95% Coverage		26.6		95% BCA Bootstrap UTL with 95% Coverage				26.6	
584	95% UPL				26.6		90% Percentile				26.15	
585	90% Chebyshev UPL				31.65		95% Percentile				26.38	
586	95% Chebyshev UPL				35.64		99% Percentile				26.56	
587	95% USL				26.6							
588												
589	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
590	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
591	and consists of observations collected from clean unimpacted locations.											
592	The use of USL tends to provide a balance between false positives and false negatives provided the data											
593	represents a background data set and when many onsite observations need to be compared with the BTV.											
594												
595	CALCIUM, TOTAL (mg/L)											
596												
597	General Statistics											
598	Total Number of Observations				42		Number of Distinct Observations				37	
599	Minimum				18.9		First Quartile				21.45	
600	Second Largest				74.7		Median				23.15	

	A	B	C	D	E	F	G	H	I	J	K	L
601					Maximum	93					Third Quartile	25.43
602					Mean	28.22					SD	15.53
603					Coefficient of Variation	0.55					Skewness	3.034
604					Mean of logged Data	3.256					SD of logged Data	0.362
605												
606	Critical Values for Background Threshold Values (BTVs)											
607					Tolerance Factor K (For UTL)	2.104					d2max (for USL)	2.887
608												
609	Normal GOF Test											
610					Shapiro Wilk Test Statistic	0.534					Shapiro Wilk GOF Test	
611					5% Shapiro Wilk Critical Value	0.942					Data Not Normal at 5% Significance Level	
612					Lilliefors Test Statistic	0.354					Lilliefors GOF Test	
613					5% Lilliefors Critical Value	0.135					Data Not Normal at 5% Significance Level	
614	Data Not Normal at 5% Significance Level											
615												
616	Background Statistics Assuming Normal Distribution											
617					95% UTL with 95% Coverage	60.88					90% Percentile (z)	48.12
618					95% UPL (t)	54.66					95% Percentile (z)	53.76
619					95% USL	73.05					99% Percentile (z)	64.34
620												
621	Gamma GOF Test											
622					A-D Test Statistic	6.01					Anderson-Darling Gamma GOF Test	
623					5% A-D Critical Value	0.751					Data Not Gamma Distributed at 5% Significance Level	
624					K-S Test Statistic	0.317					Kolmogorov-Smirnov Gamma GOF Test	
625					5% K-S Critical Value	0.137					Data Not Gamma Distributed at 5% Significance Level	
626	Data Not Gamma Distributed at 5% Significance Level											
627												
628	Gamma Statistics											
629					k hat (MLE)	6.101					k star (bias corrected MLE)	5.681
630					Theta hat (MLE)	4.625					Theta star (bias corrected MLE)	4.967
631					nu hat (MLE)	512.5					nu star (bias corrected)	477.2
632					MLE Mean (bias corrected)	28.22					MLE Sd (bias corrected)	11.84
633												
634	Background Statistics Assuming Gamma Distribution											
635					95% Wilson Hilferty (WH) Approx. Gamma UPL	50.15					90% Percentile	44.05
636					95% Hawkins Wixley (HW) Approx. Gamma UPL	49.61					95% Percentile	50.08
637					95% WH Approx. Gamma UTL with 95% Coverage	57.22					99% Percentile	62.75
638					95% HW Approx. Gamma UTL with 95% Coverage	56.79						
639					95% WH USL	72.91					95% HW USL	73.05
640												
641	Lognormal GOF Test											
642					Shapiro Wilk Test Statistic	0.666					Shapiro Wilk Lognormal GOF Test	
643					5% Shapiro Wilk Critical Value	0.942					Data Not Lognormal at 5% Significance Level	
644					Lilliefors Test Statistic	0.286					Lilliefors Lognormal GOF Test	
645					5% Lilliefors Critical Value	0.135					Data Not Lognormal at 5% Significance Level	
646	Data Not Lognormal at 5% Significance Level											
647												
648	Background Statistics assuming Lognormal Distribution											
649					95% UTL with 95% Coverage	55.58					90% Percentile (z)	41.26
650					95% UPL (t)	48.07					95% Percentile (z)	47.07

	A	B	C	D	E	F	G	H	I	J	K	L
651					95% USL	73.83					99% Percentile (z)	60.25
652												
653	Nonparametric Distribution Free Background Statistics											
654	Data do not follow a Discernible Distribution (0.05)											
655												
656	Nonparametric Upper Limits for Background Threshold Values											
657				Order of Statistic, r		42				95% UTL with 95% Coverage		93
658				Approx, f used to compute achieved CC		2.211				Approximate Actual Confidence Coefficient achieved by UTL		0.884
659										Approximate Sample Size needed to achieve specified CC		59
660				95% Percentile Bootstrap UTL with 95% Coverage		92.08				95% BCA Bootstrap UTL with 95% Coverage		92.08
661					95% UPL	73.74				90% Percentile		34.81
662					90% Chebyshev UPL	75.35				95% Percentile		67.52
663					95% Chebyshev UPL	96.7				99% Percentile		85.5
664					95% USL	93						
665												
666	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
667	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
668	and consists of observations collected from clean unimpacted locations.											
669	The use of USL tends to provide a balance between false positives and false negatives provided the data											
670	represents a background data set and when many onsite observations need to be compared with the BTV.											
671												
672	CHLORIDE (mg/L)											
673												
674	General Statistics											
675				Total Number of Observations		43				Number of Distinct Observations		38
676				Minimum		19.6				First Quartile		22.5
677				Second Largest		34.3				Median		25.2
678				Maximum		34.5				Third Quartile		26.55
679				Mean		25.16				SD		3.416
680				Coefficient of Variation		0.136				Skewness		0.934
681				Mean of logged Data		3.217				SD of logged Data		0.131
682												
683	Critical Values for Background Threshold Values (BTVs)											
684				Tolerance Factor K (For UTL)		2.097				d2max (for USL)		2.897
685												
686	Normal GOF Test											
687				Shapiro Wilk Test Statistic		0.93				Shapiro Wilk GOF Test		
688				5% Shapiro Wilk Critical Value		0.943				Data Not Normal at 5% Significance Level		
689				Lilliefors Test Statistic		0.119				Lilliefors GOF Test		
690				5% Lilliefors Critical Value		0.134				Data appear Normal at 5% Significance Level		
691	Data appear Approximate Normal at 5% Significance Level											
692												
693	Background Statistics Assuming Normal Distribution											
694				95% UTL with 95% Coverage		32.32				90% Percentile (z)		29.54
695					95% UPL (t)	30.97				95% Percentile (z)		30.78
696					95% USL	35.05				99% Percentile (z)		33.11
697												
698	Gamma GOF Test											
699				A-D Test Statistic		0.508				Anderson-Darling Gamma GOF Test		
700				5% A-D Critical Value		0.747				Detected data appear Gamma Distributed at 5% Significance Level		

	A	B	C	D	E	F	G	H	I	J	K	L
701	K-S Test Statistic					0.101	Kolmogorov-Smirnov Gamma GOF Test					
702	5% K-S Critical Value					0.134	Detected data appear Gamma Distributed at 5% Significance Level					
703	Detected data appear Gamma Distributed at 5% Significance Level											
704												
705	Gamma Statistics											
706	k hat (MLE)					58.69	k star (bias corrected MLE)					54.61
707	Theta hat (MLE)					0.429	Theta star (bias corrected MLE)					0.461
708	nu hat (MLE)					5047	nu star (bias corrected)					4697
709	MLE Mean (bias corrected)					25.16	MLE Sd (bias corrected)					3.404
710												
711	Background Statistics Assuming Gamma Distribution											
712	95% Wilson Hilferty (WH) Approx. Gamma UPL					31.08	90% Percentile					29.61
713	95% Hawkins Wixley (HW) Approx. Gamma UPL					31.1	95% Percentile					31.01
714	95% WH Approx. Gamma UTL with 95% Coverage					32.62	99% Percentile					33.75
715	95% HW Approx. Gamma UTL with 95% Coverage					32.66						
716	95% WH USL					35.88	95% HW USL					36.01
717												
718	Lognormal GOF Test											
719	Shapiro Wilk Test Statistic					0.96	Shapiro Wilk Lognormal GOF Test					
720	5% Shapiro Wilk Critical Value					0.943	Data appear Lognormal at 5% Significance Level					
721	Lilliefors Test Statistic					0.0959	Lilliefors Lognormal GOF Test					
722	5% Lilliefors Critical Value					0.134	Data appear Lognormal at 5% Significance Level					
723	Data appear Lognormal at 5% Significance Level											
724												
725	Background Statistics assuming Lognormal Distribution											
726	95% UTL with 95% Coverage					32.82	90% Percentile (z)					29.5
727	95% UPL (t)					31.16	95% Percentile (z)					30.93
728	95% USL					36.44	99% Percentile (z)					33.82
729												
730	Nonparametric Distribution Free Background Statistics											
731	Data appear Approximate Normal at 5% Significance Level											
732												
733	Nonparametric Upper Limits for Background Threshold Values											
734	Order of Statistic, r					43	95% UTL with 95% Coverage					34.5
735	Approx, f used to compute achieved CC					2.263	Approximate Actual Confidence Coefficient achieved by UTL					0.89
736							Approximate Sample Size needed to achieve specified CC					59
737	95% Percentile Bootstrap UTL with 95% Coverage					34.48	95% BCA Bootstrap UTL with 95% Coverage					34.31
738	95% UPL					33.96	90% Percentile					28.54
739	90% Chebyshev UPL					35.52	95% Percentile					32.35
740	95% Chebyshev UPL					40.22	99% Percentile					34.42
741	95% USL					34.5						
742												
743	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
744	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
745	and consists of observations collected from clean unimpacted locations.											
746	The use of USL tends to provide a balance between false positives and false negatives provided the data											
747	represents a background data set and when many onsite observations need to be compared with the BTV.											
748												
749	CIS 1,2-DICHLOROETHENE (ug/L)											
750												

	A	B	C	D	E	F	G	H	I	J	K	L
751	General Statistics											
752	Total Number of Observations					43	Number of Missing Observations					0
753	Number of Distinct Observations					1						
754	Number of Detects					0	Number of Non-Detects					43
755	Number of Distinct Detects					0	Number of Distinct Non-Detects					1
756	Minimum Detect					N/A	Minimum Non-Detect					1
757	Maximum Detect					N/A	Maximum Non-Detect					1
758	Variance Detected					N/A	Percent Non-Detects					100%
759	Mean Detected					N/A	SD Detected					N/A
760	Mean of Detected Logged Data					N/A	SD of Detected Logged Data					N/A
761												
762	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
763	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
764	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
765												
766	The data set for variable CIS 1,2-DICHLOROETHENE (ug/L) was not processed!											
767												
768												
769	Chemical Oxygen Demand (mg/L)											
770												
771	General Statistics											
772	Total Number of Observations					42	Number of Missing Observations					0
773	Number of Distinct Observations					3						
774	Number of Detects					0	Number of Non-Detects					42
775	Number of Distinct Detects					0	Number of Distinct Non-Detects					3
776	Minimum Detect					N/A	Minimum Non-Detect					5
777	Maximum Detect					N/A	Maximum Non-Detect					15
778	Variance Detected					N/A	Percent Non-Detects					100%
779	Mean Detected					N/A	SD Detected					N/A
780	Mean of Detected Logged Data					N/A	SD of Detected Logged Data					N/A
781												
782	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
783	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
784	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
785												
786	The data set for variable Chemical Oxygen Demand (mg/L) was not processed!											
787												
788												
789	ETHYLBENZENE (mg/L)											
790												
791	General Statistics											
792	Total Number of Observations					43	Number of Missing Observations					0
793	Number of Distinct Observations					1						
794	Number of Detects					0	Number of Non-Detects					43
795	Number of Distinct Detects					0	Number of Distinct Non-Detects					1
796	Minimum Detect					N/A	Minimum Non-Detect					1
797	Maximum Detect					N/A	Maximum Non-Detect					1
798	Variance Detected					N/A	Percent Non-Detects					100%
799	Mean Detected					N/A	SD Detected					N/A
800	Mean of Detected Logged Data					N/A	SD of Detected Logged Data					N/A

	A	B	C	D	E	F	G	H	I	J	K	L
801												
802	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
803	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
804	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
805												
806	The data set for variable ETHYLBENZENE (mg/L) was not processed!											
807												
808												
809	FLUORIDE (mg/L)											
810												
811	General Statistics											
812	Total Number of Observations				42		Number of Missing Observations				0	
813	Number of Distinct Observations				7							
814	Number of Detects				15		Number of Non-Detects				27	
815	Number of Distinct Detects				6		Number of Distinct Non-Detects				2	
816	Minimum Detect				0.12		Minimum Non-Detect				0.2	
817	Maximum Detect				0.24		Maximum Non-Detect				0.5	
818	Variance Detected				0.00157		Percent Non-Detects				64.29%	
819	Mean Detected				0.157		SD Detected				0.0396	
820	Mean of Detected Logged Data				-1.881		SD of Detected Logged Data				0.237	
821												
822	Critical Values for Background Threshold Values (BTVs)											
823	Tolerance Factor K (For UTL)				2.104		d2max (for USL)				2.887	
824												
825	Normal GOF Test on Detects Only											
826	Shapiro Wilk Test Statistic				0.807		Shapiro Wilk GOF Test					
827	5% Shapiro Wilk Critical Value				0.881		Data Not Normal at 5% Significance Level					
828	Lilliefors Test Statistic				0.263		Lilliefors GOF Test					
829	5% Lilliefors Critical Value				0.22		Data Not Normal at 5% Significance Level					
830	Data Not Normal at 5% Significance Level											
831												
832	Kaplan Meier (KM) Background Statistics Assuming Normal Distribution											
833	KM Mean				0.144		KM SD				0.0307	
834	95% UTL95% Coverage				0.208		95% KM UPL (t)				0.196	
835	90% KM Percentile (z)				0.183		95% KM Percentile (z)				0.194	
836	99% KM Percentile (z)				0.215		95% KM USL				0.232	
837												
838	DL/2 Substitution Background Statistics Assuming Normal Distribution											
839	Mean				0.163		SD				0.0649	
840	95% UTL95% Coverage				0.3		95% UPL (t)				0.274	
841	90% Percentile (z)				0.246		95% Percentile (z)				0.27	
842	99% Percentile (z)				0.314		95% USL				0.351	
843	DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons											
844												
845	Gamma GOF Tests on Detected Observations Only											
846	A-D Test Statistic				1.282		Anderson-Darling GOF Test					
847	5% A-D Critical Value				0.735		Data Not Gamma Distributed at 5% Significance Level					
848	K-S Test Statistic				0.254		Kolmogorov-Smirnov GOF					
849	5% K-S Critical Value				0.221		Data Not Gamma Distributed at 5% Significance Level					
850	Data Not Gamma Distributed at 5% Significance Level											

	A	B	C	D	E	F	G	H	I	J	K	L				
851																
852	Gamma Statistics on Detected Data Only															
853	k hat (MLE)				18.4		k star (bias corrected MLE)				14.76					
854	Theta hat (MLE)				0.00852		Theta star (bias corrected MLE)				0.0106					
855	nu hat (MLE)				551.9		nu star (bias corrected)				442.9					
856	MLE Mean (bias corrected)				0.157											
857	MLE Sd (bias corrected)				0.0408		95% Percentile of Chisquare (2kstar)				43.19					
858																
859	Gamma ROS Statistics using Imputed Non-Detects															
860	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs															
861	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)															
862	For such situations, GROS method may yield incorrect values of UCLs and BTVs															
863	This is especially true when the sample size is small.															
864	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates															
865	Minimum				0.0931		Mean				0.146					
866	Maximum				0.24		Median				0.14					
867	SD				0.0324		CV				0.222					
868	k hat (MLE)				22.23		k star (bias corrected MLE)				20.66					
869	Theta hat (MLE)				0.00655		Theta star (bias corrected MLE)				0.00705					
870	nu hat (MLE)				1868		nu star (bias corrected)				1736					
871	MLE Mean (bias corrected)				0.146		MLE Sd (bias corrected)				0.032					
872	95% Percentile of Chisquare (2kstar)				57.33		90% Percentile				0.188					
873	95% Percentile				0.202		99% Percentile				0.23					
874	The following statistics are computed using Gamma ROS Statistics on Imputed Data															
875	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods															
876					WH		HW						WH		HW	
877	95% Approx. Gamma UTL with 95% Coverage				0.219		0.22		95% Approx. Gamma UPL				0.203		0.203	
878	95% Gamma USL				0.253		0.255									
879																
880	Estimates of Gamma Parameters using KM Estimates															
881	Mean (KM)				0.144		SD (KM)				0.0307					
882	Variance (KM)				9.4031E-4		SE of Mean (KM)				0.00613					
883	k hat (KM)				22		k star (KM)				20.45					
884	nu hat (KM)				1848		nu star (KM)				1717					
885	theta hat (KM)				0.00654		theta star (KM)				0.00703					
886	80% gamma percentile (KM)				0.17		90% gamma percentile (KM)				0.186					
887	95% gamma percentile (KM)				0.2		99% gamma percentile (KM)				0.228					
888																
889	The following statistics are computed using gamma distribution and KM estimates															
890	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods															
891					WH		HW						WH		HW	
892	95% Approx. Gamma UTL with 95% Coverage				0.209		0.209		95% Approx. Gamma UPL				0.195		0.194	
893	95% KM Gamma Percentile				0.193		0.192		95% Gamma USL				0.238		0.239	
894																
895	Lognormal GOF Test on Detected Observations Only															
896	Shapiro Wilk Test Statistic				0.828		Shapiro Wilk GOF Test									
897	5% Shapiro Wilk Critical Value				0.881		Data Not Lognormal at 5% Significance Level									
898	Lilliefors Test Statistic				0.24		Lilliefors GOF Test									
899	5% Lilliefors Critical Value				0.22		Data Not Lognormal at 5% Significance Level									
900	Data Not Lognormal at 5% Significance Level															

	A	B	C	D	E	F	G	H	I	J	K	L
901												
902	Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects											
903	Mean in Original Scale				0.146		Mean in Log Scale				-1.945	
904	SD in Original Scale				0.0309		SD in Log Scale				0.199	
905	95% UTL95% Coverage				0.217		95% BCA UTL95% Coverage				0.2	
906	95% Bootstrap (%) UTL95% Coverage				0.238		95% UPL (t)				0.201	
907	90% Percentile (z)				0.185		95% Percentile (z)				0.198	
908	99% Percentile (z)				0.227		95% USL				0.254	
909												
910	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution											
911	KM Mean of Logged Data				-1.958		95% KM UTL (Lognormal)95% Coverage				0.209	
912	KM SD of Logged Data				0.186		95% KM UPL (Lognormal)				0.194	
913	95% KM Percentile Lognormal (z)				0.192		95% KM USL (Lognormal)				0.242	
914												
915	Background DL/2 Statistics Assuming Lognormal Distribution											
916	Mean in Original Scale				0.163		Mean in Log Scale				-1.89	
917	SD in Original Scale				0.0649		SD in Log Scale				0.395	
918	95% UTL95% Coverage				0.346		95% UPL (t)				0.296	
919	90% Percentile (z)				0.25		95% Percentile (z)				0.289	
920	99% Percentile (z)				0.378		95% USL				0.472	
921	DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.											
922												
923	Nonparametric Distribution Free Background Statistics											
924	Data do not follow a Discernible Distribution (0.05)											
925												
926	Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)											
927	Order of Statistic, r				42		95% UTL with95% Coverage				0.5	
928	Approx, f used to compute achieved CC				2.211		Approximate Actual Confidence Coefficient achieved by UTL				0.884	
929	Approximate Sample Size needed to achieve specified CC				59		95% UPL				0.5	
930	95% USL				0.5		95% KM Chebyshev UPL				0.279	
931												
932	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
933	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
934	and consists of observations collected from clean unimpacted locations.											
935	The use of USL tends to provide a balance between false positives and false negatives provided the data											
936	represents a background data set and when many onsite observations need to be compared with the BTV.											
937												
938	IRON, DISSOLVED (mg/L)											
939												
940	General Statistics											
941	Total Number of Observations				11		Number of Missing Observations				0	
942	Number of Distinct Observations				2							
943	Number of Detects				0		Number of Non-Detects				11	
944	Number of Distinct Detects				0		Number of Distinct Non-Detects				2	
945	Minimum Detect				N/A		Minimum Non-Detect				0.05	
946	Maximum Detect				N/A		Maximum Non-Detect				0.06	
947	Variance Detected				N/A		Percent Non-Detects				100%	
948	Mean Detected				N/A		SD Detected				N/A	
949	Mean of Detected Logged Data				N/A		SD of Detected Logged Data				N/A	
950												

	A	B	C	D	E	F	G	H	I	J	K	L
951	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
952	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
953	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
954												
955	The data set for variable IRON, DISSOLVED (mg/L) was not processed!											
956												
957												
958	IRON, TOTAL (mg/L)											
959												
960	General Statistics											
961	Total Number of Observations				41		Number of Missing Observations				0	
962	Number of Distinct Observations				11							
963	Number of Detects				13		Number of Non-Detects				28	
964	Number of Distinct Detects				10		Number of Distinct Non-Detects				1	
965	Minimum Detect				0.07		Minimum Non-Detect				0.06	
966	Maximum Detect				0.37		Maximum Non-Detect				0.06	
967	Variance Detected				0.00866		Percent Non-Detects				68.29%	
968	Mean Detected				0.166		SD Detected				0.0931	
969	Mean of Detected Logged Data				-1.912		SD of Detected Logged Data				0.482	
970												
971	Critical Values for Background Threshold Values (BTVs)											
972	Tolerance Factor K (For UTL)				2.11		d2max (for USL)				2.878	
973												
974	Normal GOF Test on Detects Only											
975	Shapiro Wilk Test Statistic				0.783		Shapiro Wilk GOF Test					
976	5% Shapiro Wilk Critical Value				0.866		Data Not Normal at 5% Significance Level					
977	Lilliefors Test Statistic				0.303		Lilliefors GOF Test					
978	5% Lilliefors Critical Value				0.234		Data Not Normal at 5% Significance Level					
979	Data Not Normal at 5% Significance Level											
980												
981	Kaplan Meier (KM) Background Statistics Assuming Normal Distribution											
982	KM Mean				0.0937		KM SD				0.0705	
983	95% UTL95% Coverage				0.242		95% KM UPL (t)				0.214	
984	90% KM Percentile (z)				0.184		95% KM Percentile (z)				0.21	
985	99% KM Percentile (z)				0.258		95% KM USL				0.297	
986												
987	DL/2 Substitution Background Statistics Assuming Normal Distribution											
988	Mean				0.0732		SD				0.0819	
989	95% UTL95% Coverage				0.246		95% UPL (t)				0.213	
990	90% Percentile (z)				0.178		95% Percentile (z)				0.208	
991	99% Percentile (z)				0.264		95% USL				0.309	
992	DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons											
993												
994	Gamma GOF Tests on Detected Observations Only											
995	A-D Test Statistic				0.726		Anderson-Darling GOF Test					
996	5% A-D Critical Value				0.737		Detected data appear Gamma Distributed at 5% Significance Level					
997	K-S Test Statistic				0.267		Kolmogorov-Smirnov GOF					
998	5% K-S Critical Value				0.238		Data Not Gamma Distributed at 5% Significance Level					
999	Detected data follow Appr. Gamma Distribution at 5% Significance Level											
1000												

	A	B	C	D	E	F	G	H	I	J	K	L				
1001	Gamma Statistics on Detected Data Only															
1002	k hat (MLE)				4.431		k star (bias corrected MLE)				3.46					
1003	Theta hat (MLE)				0.0375		Theta star (bias corrected MLE)				0.048					
1004	nu hat (MLE)				115.2		nu star (bias corrected)				89.95					
1005	MLE Mean (bias corrected)				0.166											
1006	MLE Sd (bias corrected)				0.0893		95% Percentile of Chisquare (2kstar)				13.95					
1007																
1008	Gamma ROS Statistics using Imputed Non-Detects															
1009	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs															
1010	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)															
1011	For such situations, GROS method may yield incorrect values of UCLs and BTVs															
1012	This is especially true when the sample size is small.															
1013	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates															
1014	Minimum				0.01		Mean				0.0613					
1015	Maximum				0.37		Median				0.01					
1016	SD				0.0887		CV				1.446					
1017	k hat (MLE)				0.699		k star (bias corrected MLE)				0.664					
1018	Theta hat (MLE)				0.0877		Theta star (bias corrected MLE)				0.0923					
1019	nu hat (MLE)				57.31		nu star (bias corrected)				54.45					
1020	MLE Mean (bias corrected)				0.0613		MLE Sd (bias corrected)				0.0753					
1021	95% Percentile of Chisquare (2kstar)				4.607		90% Percentile				0.156					
1022	95% Percentile				0.213		99% Percentile				0.349					
1023	The following statistics are computed using Gamma ROS Statistics on Imputed Data															
1024	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods															
1025					WH		HW						WH		HW	
1026	95% Approx. Gamma UTL with 95% Coverage				0.279		0.293		95% Approx. Gamma UPL				0.206		0.208	
1027	95% Gamma USL				0.462		0.522									
1028																
1029	Estimates of Gamma Parameters using KM Estimates															
1030	Mean (KM)				0.0937		SD (KM)				0.0705					
1031	Variance (KM)				0.00497		SE of Mean (KM)				0.0115					
1032	k hat (KM)				1.763		k star (KM)				1.651					
1033	nu hat (KM)				144.6		nu star (KM)				135.4					
1034	theta hat (KM)				0.0531		theta star (KM)				0.0567					
1035	80% gamma percentile (KM)				0.143		90% gamma percentile (KM)				0.191					
1036	95% gamma percentile (KM)				0.236		99% gamma percentile (KM)				0.339					
1037																
1038	The following statistics are computed using gamma distribution and KM estimates															
1039	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods															
1040					WH		HW						WH		HW	
1041	95% Approx. Gamma UTL with 95% Coverage				0.229		0.228		95% Approx. Gamma UPL				0.194		0.191	
1042	95% KM Gamma Percentile				0.189		0.186		95% Gamma USL				0.309		0.313	
1043																
1044	Lognormal GOF Test on Detected Observations Only															
1045	Shapiro Wilk Test Statistic				0.921		Shapiro Wilk GOF Test									
1046	5% Shapiro Wilk Critical Value				0.866		Detected Data appear Lognormal at 5% Significance Level									
1047	Lilliefors Test Statistic				0.237		Lilliefors GOF Test									
1048	5% Lilliefors Critical Value				0.234		Data Not Lognormal at 5% Significance Level									
1049	Detected Data appear Approximate Lognormal at 5% Significance Level															
1050																

	A	B	C	D	E	F	G	H	I	J	K	L
1051	Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects											
1052	Mean in Original Scale				0.0756		Mean in Log Scale				-3.056	
1053	SD in Original Scale				0.0822		SD in Log Scale				1	
1054	95% UTL95% Coverage				0.389		95% BCA UTL95% Coverage				0.35	
1055	95% Bootstrap (%) UTL95% Coverage				0.37		95% UPL (t)				0.259	
1056	90% Percentile (z)				0.17		95% Percentile (z)				0.244	
1057	99% Percentile (z)				0.482		95% USL				0.837	
1058												
1059	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution											
1060	KM Mean of Logged Data				-2.528		95% KM UTL (Lognormal)95% Coverage				0.226	
1061	KM SD of Logged Data				0.494		95% KM UPL (Lognormal)				0.185	
1062	95% KM Percentile Lognormal (z)				0.18		95% KM USL (Lognormal)				0.331	
1063												
1064	Background DL/2 Statistics Assuming Lognormal Distribution											
1065	Mean in Original Scale				0.0732		Mean in Log Scale				-3.001	
1066	SD in Original Scale				0.0819		SD in Log Scale				0.796	
1067	95% UTL95% Coverage				0.267		95% UPL (t)				0.193	
1068	90% Percentile (z)				0.138		95% Percentile (z)				0.184	
1069	99% Percentile (z)				0.317		95% USL				0.492	
1070	DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.											
1071												
1072	Nonparametric Distribution Free Background Statistics											
1073	Data appear to follow a Discernible Distribution at 5% Significance Level											
1074												
1075	Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)											
1076	Order of Statistic, r				41		95% UTL with95% Coverage				0.37	
1077	Approx, f used to compute achieved CC				2.158		Approximate Actual Confidence Coefficient achieved by UTL				0.878	
1078	Approximate Sample Size needed to achieve specified CC				59		95% UPL				0.335	
1079	95% USL				0.37		95% KM Chebyshev UPL				0.405	
1080												
1081	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
1082	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
1083	and consists of observations collected from clean unimpacted locations.											
1084	The use of USL tends to provide a balance between false positives and false negatives provided the data											
1085	represents a background data set and when many onsite observations need to be compared with the BTV.											
1086												
1087	MAGNESIUM, DISSOLVED (mg/L)											
1088												
1089	General Statistics											
1090	Total Number of Observations				11		Number of Distinct Observations				9	
1091	Minimum				7.4		First Quartile				8.8	
1092	Second Largest				9.8		Median				9.3	
1093	Maximum				10.7		Third Quartile				9.6	
1094	Mean				9.191		SD				0.869	
1095	Coefficient of Variation				0.0945		Skewness				-0.521	
1096	Mean of logged Data				2.214		SD of logged Data				0.0975	
1097												
1098	Critical Values for Background Threshold Values (BTVs)											
1099	Tolerance Factor K (For UTL)				2.815		d2max (for USL)				2.234	
1100												

	A	B	C	D	E	F	G	H	I	J	K	L
1101	Normal GOF Test											
1102	Shapiro Wilk Test Statistic					0.955	Shapiro Wilk GOF Test					
1103	5% Shapiro Wilk Critical Value					0.85	Data appear Normal at 5% Significance Level					
1104	Lilliefors Test Statistic					0.151	Lilliefors GOF Test					
1105	5% Lilliefors Critical Value					0.251	Data appear Normal at 5% Significance Level					
1106	Data appear Normal at 5% Significance Level											
1107												
1108	Background Statistics Assuming Normal Distribution											
1109	95% UTL with 95% Coverage				11.64						90% Percentile (z)	10.3
1110	95% UPL (t)				10.84						95% Percentile (z)	10.62
1111	95% USL				11.13						99% Percentile (z)	11.21
1112												
1113	Gamma GOF Test											
1114	A-D Test Statistic					0.371	Anderson-Darling Gamma GOF Test					
1115	5% A-D Critical Value					0.726	Detected data appear Gamma Distributed at 5% Significance Level					
1116	K-S Test Statistic					0.153	Kolmogorov-Smirnov Gamma GOF Test					
1117	5% K-S Critical Value					0.254	Detected data appear Gamma Distributed at 5% Significance Level					
1118	Detected data appear Gamma Distributed at 5% Significance Level											
1119												
1120	Gamma Statistics											
1121	k hat (MLE)				118.4	k star (bias corrected MLE)					86.19	
1122	Theta hat (MLE)				0.0776	Theta star (bias corrected MLE)					0.107	
1123	nu hat (MLE)				2605	nu star (bias corrected)					1896	
1124	MLE Mean (bias corrected)				9.191	MLE Sd (bias corrected)					0.99	
1125												
1126	Background Statistics Assuming Gamma Distribution											
1127	95% Wilson Hilferty (WH) Approx. Gamma UPL				10.94	90% Percentile					10.48	
1128	95% Hawkins Wixley (HW) Approx. Gamma UPL				10.96	95% Percentile					10.88	
1129	95% WH Approx. Gamma UTL with 95% Coverage				11.89	99% Percentile					11.65	
1130	95% HW Approx. Gamma UTL with 95% Coverage				11.92							
1131	95% WH USL				11.29	95% HW USL					11.31	
1132												
1133	Lognormal GOF Test											
1134	Shapiro Wilk Test Statistic					0.938	Shapiro Wilk Lognormal GOF Test					
1135	5% Shapiro Wilk Critical Value					0.85	Data appear Lognormal at 5% Significance Level					
1136	Lilliefors Test Statistic					0.159	Lilliefors Lognormal GOF Test					
1137	5% Lilliefors Critical Value					0.251	Data appear Lognormal at 5% Significance Level					
1138	Data appear Lognormal at 5% Significance Level											
1139												
1140	Background Statistics assuming Lognormal Distribution											
1141	95% UTL with 95% Coverage				12.04	90% Percentile (z)					10.37	
1142	95% UPL (t)				11.01	95% Percentile (z)					10.74	
1143	95% USL				11.38	99% Percentile (z)					11.48	
1144												
1145	Nonparametric Distribution Free Background Statistics											
1146	Data appear Normal at 5% Significance Level											
1147												
1148	Nonparametric Upper Limits for Background Threshold Values											
1149	Order of Statistic, r				11	95% UTL with 95% Coverage					10.7	
1150	Approx, f used to compute achieved CC				0.579	Approximate Actual Confidence Coefficient achieved by UTL					0.431	

	A	B	C	D	E	F	G	H	I	J	K	L
1151							Approximate Sample Size needed to achieve specified CC					59
1152	95% Percentile Bootstrap UTL with 95% Coverage					10.7	95% BCA Bootstrap UTL with 95% Coverage					10.7
1153	95% UPL					10.7	90% Percentile					9.8
1154	90% Chebyshev UPL					11.91	95% Percentile					10.25
1155	95% Chebyshev UPL					13.15	99% Percentile					10.61
1156	95% USL					10.7						
1157												
1158	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
1159	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
1160	and consists of observations collected from clean unimpacted locations.											
1161	The use of USL tends to provide a balance between false positives and false negatives provided the data											
1162	represents a background data set and when many onsite observations need to be compared with the BTV.											
1163												
1164	MAGNESIUM, TOTAL (mg/L)											
1165												
1166	General Statistics											
1167	Total Number of Observations					40	Number of Distinct Observations					21
1168	Minimum					7.6	First Quartile					8.5
1169	Second Largest					10.4	Median					9
1170	Maximum					10.6	Third Quartile					9.525
1171	Mean					9.018	SD					0.675
1172	Coefficient of Variation					0.0748	Skewness					0.122
1173	Mean of logged Data					2.196	SD of logged Data					0.075
1174												
1175	Critical Values for Background Threshold Values (BTVs)											
1176	Tolerance Factor K (For UTL)					2.117	d2max (for USL)					2.868
1177												
1178	Normal GOF Test											
1179	Shapiro Wilk Test Statistic					0.982	Shapiro Wilk GOF Test					
1180	5% Shapiro Wilk Critical Value					0.94	Data appear Normal at 5% Significance Level					
1181	Lilliefors Test Statistic					0.0853	Lilliefors GOF Test					
1182	5% Lilliefors Critical Value					0.139	Data appear Normal at 5% Significance Level					
1183	Data appear Normal at 5% Significance Level											
1184												
1185	Background Statistics Assuming Normal Distribution											
1186	95% UTL with 95% Coverage					10.45	90% Percentile (z)					9.882
1187	95% UPL (t)					10.17	95% Percentile (z)					10.13
1188	95% USL					10.95	99% Percentile (z)					10.59
1189												
1190	Gamma GOF Test											
1191	A-D Test Statistic					0.242	Anderson-Darling Gamma GOF Test					
1192	5% A-D Critical Value					0.747	Detected data appear Gamma Distributed at 5% Significance Level					
1193	K-S Test Statistic					0.0784	Kolmogorov-Smirnov Gamma GOF Test					
1194	5% K-S Critical Value					0.139	Detected data appear Gamma Distributed at 5% Significance Level					
1195	Detected data appear Gamma Distributed at 5% Significance Level											
1196												
1197	Gamma Statistics											
1198	k hat (MLE)					183	k star (bias corrected MLE)					169.3
1199	Theta hat (MLE)					0.0493	Theta star (bias corrected MLE)					0.0533
1200	nu hat (MLE)					14639	nu star (bias corrected)					13543

	A	B	C	D	E	F	G	H	I	J	K	L
1201	MLE Mean (bias corrected)					9.018	MLE Sd (bias corrected)					0.693
1202												
1203	Background Statistics Assuming Gamma Distribution											
1204	95% Wilson Hilferty (WH) Approx. Gamma UPL					10.2	90% Percentile					9.916
1205	95% Hawkins Wixley (HW) Approx. Gamma UPL					10.21	95% Percentile					10.19
1206	95% WH Approx. Gamma UTL with 95% Coverage				95% Coverage	10.51	99% Percentile					10.71
1207	95% HW Approx. Gamma UTL with 95% Coverage				95% Coverage	10.51						
1208	95% WH USL					11.08	95% HW USL					11.09
1209												
1210	Lognormal GOF Test											
1211	Shapiro Wilk Test Statistic					0.983	Shapiro Wilk Lognormal GOF Test					
1212	5% Shapiro Wilk Critical Value					0.94	Data appear Lognormal at 5% Significance Level					
1213	Lilliefors Test Statistic					0.0739	Lilliefors Lognormal GOF Test					
1214	5% Lilliefors Critical Value					0.139	Data appear Lognormal at 5% Significance Level					
1215	Data appear Lognormal at 5% Significance Level											
1216												
1217	Background Statistics assuming Lognormal Distribution											
1218	95% UTL with 95% Coverage				95% Coverage	10.54	90% Percentile (z)					9.9
1219	95% UPL (t)					10.22	95% Percentile (z)					10.17
1220	95% USL					11.15	99% Percentile (z)					10.71
1221												
1222	Nonparametric Distribution Free Background Statistics											
1223	Data appear Normal at 5% Significance Level											
1224												
1225	Nonparametric Upper Limits for Background Threshold Values											
1226	Order of Statistic, r					40	95% UTL with 95% Coverage					10.6
1227	Approx, f used to compute achieved CC					2.105	Approximate Actual Confidence Coefficient achieved by UTL					0.871
1228							Approximate Sample Size needed to achieve specified CC					59
1229	95% Percentile Bootstrap UTL with 95% Coverage				95% Coverage	10.6	95% BCA Bootstrap UTL with 95% Coverage					10.6
1230	95% UPL					10.38	90% Percentile					9.71
1231	90% Chebyshev UPL					11.07	95% Percentile					10.02
1232	95% Chebyshev UPL					12	99% Percentile					10.52
1233	95% USL					10.6						
1234												
1235	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
1236	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
1237	and consists of observations collected from clean unimpacted locations.											
1238	The use of USL tends to provide a balance between false positives and false negatives provided the data											
1239	represents a background data set and when many onsite observations need to be compared with the BTV.											
1240												
1241	MANGANESE, DISSOLVED (mg/L)											
1242												
1243	General Statistics											
1244	Total Number of Observations					11	Number of Distinct Observations					8
1245	Minimum					0.11	First Quartile					0.245
1246	Second Largest					0.32	Median					0.26
1247	Maximum					0.57	Third Quartile					0.31
1248	Mean					0.287	SD					0.111
1249	Coefficient of Variation					0.386	Skewness					1.494
1250	Mean of logged Data					-1.313	SD of logged Data					0.388

	A	B	C	D	E	F	G	H	I	J	K	L	
1251													
1252	Critical Values for Background Threshold Values (BTVs)												
1253	Tolerance Factor K (For UTL)					2.815		d2max (for USL)				2.234	
1254													
1255	Normal GOF Test												
1256	Shapiro Wilk Test Statistic					0.812		Shapiro Wilk GOF Test					
1257	5% Shapiro Wilk Critical Value					0.85		Data Not Normal at 5% Significance Level					
1258	Lilliefors Test Statistic					0.293		Lilliefors GOF Test					
1259	5% Lilliefors Critical Value					0.251		Data Not Normal at 5% Significance Level					
1260	Data Not Normal at 5% Significance Level												
1261													
1262	Background Statistics Assuming Normal Distribution												
1263	95% UTL with 95% Coverage				0.599		90% Percentile (z)				0.429		
1264	95% UPL (t)				0.497		95% Percentile (z)				0.47		
1265	95% USL				0.535		99% Percentile (z)				0.545		
1266													
1267	Gamma GOF Test												
1268	A-D Test Statistic					0.786		Anderson-Darling Gamma GOF Test					
1269	5% A-D Critical Value					0.73		Data Not Gamma Distributed at 5% Significance Level					
1270	K-S Test Statistic					0.244		Kolmogorov-Smirnov Gamma GOF Test					
1271	5% K-S Critical Value					0.256		Detected data appear Gamma Distributed at 5% Significance Level					
1272	Detected data follow Appr. Gamma Distribution at 5% Significance Level												
1273													
1274	Gamma Statistics												
1275	k hat (MLE)					7.82		k star (bias corrected MLE)				5.748	
1276	Theta hat (MLE)					0.0367		Theta star (bias corrected MLE)				0.05	
1277	nu hat (MLE)					172		nu star (bias corrected)				126.5	
1278	MLE Mean (bias corrected)					0.287		MLE Sd (bias corrected)				0.12	
1279													
1280	Background Statistics Assuming Gamma Distribution												
1281	95% Wilson Hilferty (WH) Approx. Gamma UPL				0.524		90% Percentile				0.448		
1282	95% Hawkins Wixley (HW) Approx. Gamma UPL				0.531		95% Percentile				0.508		
1283	95% WH Approx. Gamma UTL with 95% Coverage				0.686		99% Percentile				0.636		
1284	95% HW Approx. Gamma UTL with 95% Coverage				0.708								
1285	95% WH USL				0.581		95% HW USL				0.592		
1286													
1287	Lognormal GOF Test												
1288	Shapiro Wilk Test Statistic					0.856		Shapiro Wilk Lognormal GOF Test					
1289	5% Shapiro Wilk Critical Value					0.85		Data appear Lognormal at 5% Significance Level					
1290	Lilliefors Test Statistic					0.252		Lilliefors Lognormal GOF Test					
1291	5% Lilliefors Critical Value					0.251		Data Not Lognormal at 5% Significance Level					
1292	Data appear Approximate Lognormal at 5% Significance Level												
1293													
1294	Background Statistics assuming Lognormal Distribution												
1295	95% UTL with 95% Coverage				0.802		90% Percentile (z)				0.442		
1296	95% UPL (t)				0.561		95% Percentile (z)				0.509		
1297	95% USL				0.64		99% Percentile (z)				0.663		
1298													
1299	Nonparametric Distribution Free Background Statistics												
1300	Data appear Approximate Gamma Distribution at 5% Significance Level												

	A	B	C	D	E	F	G	H	I	J	K	L
1301												
1302	Nonparametric Upper Limits for Background Threshold Values											
1303	Order of Statistic, r					11	95% UTL with 95% Coverage					0.57
1304	Approx, f used to compute achieved CC					0.579	Approximate Actual Confidence Coefficient achieved by UTL					0.431
1305							Approximate Sample Size needed to achieve specified CC					59
1306	95% Percentile Bootstrap UTL with 95% Coverage					0.57	95% BCA Bootstrap UTL with 95% Coverage					0.57
1307	95% UPL					0.57	90% Percentile					0.32
1308	90% Chebyshev UPL					0.635	95% Percentile					0.445
1309	95% Chebyshev UPL					0.792	99% Percentile					0.545
1310	95% USL					0.57						
1311												
1312	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
1313	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
1314	and consists of observations collected from clean unimpacted locations.											
1315	The use of USL tends to provide a balance between false positives and false negatives provided the data											
1316	represents a background data set and when many onsite observations need to be compared with the BTV.											
1317												
1318	MANGANESE, TOTAL (mg/L)											
1319												
1320	General Statistics											
1321	Total Number of Observations					34	Number of Distinct Observations					11
1322	Minimum					0.23	First Quartile					0.26
1323	Second Largest					0.33	Median					0.27
1324	Maximum					0.34	Third Quartile					0.29
1325	Mean					0.279	SD					0.0297
1326	Coefficient of Variation					0.106	Skewness					0.552
1327	Mean of logged Data					-1.284	SD of logged Data					0.105
1328												
1329	Critical Values for Background Threshold Values (BTVs)											
1330	Tolerance Factor K (For UTL)					2.166	d2max (for USL)					2.799
1331												
1332	Normal GOF Test											
1333	Shapiro Wilk Test Statistic					0.928	Shapiro Wilk GOF Test					
1334	5% Shapiro Wilk Critical Value					0.933	Data Not Normal at 5% Significance Level					
1335	Lilliefors Test Statistic					0.146	Lilliefors GOF Test					
1336	5% Lilliefors Critical Value					0.15	Data appear Normal at 5% Significance Level					
1337	Data appear Approximate Normal at 5% Significance Level											
1338												
1339	Background Statistics Assuming Normal Distribution											
1340	95% UTL with 95% Coverage					0.343	90% Percentile (z)					0.317
1341	95% UPL (t)					0.329	95% Percentile (z)					0.327
1342	95% USL					0.362	99% Percentile (z)					0.348
1343												
1344	Gamma GOF Test											
1345	A-D Test Statistic					0.76	Anderson-Darling Gamma GOF Test					
1346	5% A-D Critical Value					0.746	Data Not Gamma Distributed at 5% Significance Level					
1347	K-S Test Statistic					0.145	Kolmogorov-Smirnov Gamma GOF Test					
1348	5% K-S Critical Value					0.15	Detected data appear Gamma Distributed at 5% Significance Level					
1349	Detected data follow Appr. Gamma Distribution at 5% Significance Level											
1350												

	A	B	C	D	E	F	G	H	I	J	K	L
1351	Gamma Statistics											
1352	k hat (MLE)				93.29		k star (bias corrected MLE)				85.08	
1353	Theta hat (MLE)				0.00299		Theta star (bias corrected MLE)				0.00327	
1354	nu hat (MLE)				6344		nu star (bias corrected)				5785	
1355	MLE Mean (bias corrected)				0.279		MLE Sd (bias corrected)				0.0302	
1356												
1357	Background Statistics Assuming Gamma Distribution											
1358	95% Wilson Hilferty (WH) Approx. Gamma UPL				0.331		90% Percentile				0.318	
1359	95% Hawkins Wixley (HW) Approx. Gamma UPL				0.331		95% Percentile				0.33	
1360	95% WH Approx. Gamma UTL with		95% Coverage		0.346		99% Percentile				0.354	
1361	95% HW Approx. Gamma UTL with		95% Coverage		0.346							
1362	95% WH USL				0.368		95% HW USL				0.368	
1363												
1364	Lognormal GOF Test											
1365	Shapiro Wilk Test Statistic				0.942		Shapiro Wilk Lognormal GOF Test					
1366	5% Shapiro Wilk Critical Value				0.933		Data appear Lognormal at 5% Significance Level					
1367	Lilliefors Test Statistic				0.14		Lilliefors Lognormal GOF Test					
1368	5% Lilliefors Critical Value				0.15		Data appear Lognormal at 5% Significance Level					
1369	Data appear Lognormal at 5% Significance Level											
1370												
1371	Background Statistics assuming Lognormal Distribution											
1372	95% UTL with		95% Coverage		0.348		90% Percentile (z)				0.317	
1373	95% UPL (t)				0.332		95% Percentile (z)				0.329	
1374	95% USL				0.371		99% Percentile (z)				0.353	
1375												
1376	Nonparametric Distribution Free Background Statistics											
1377	Data appear Approximate Normal at 5% Significance Level											
1378												
1379	Nonparametric Upper Limits for Background Threshold Values											
1380	Order of Statistic, r				34		95% UTL with 95% Coverage				0.34	
1381	Approx, f used to compute achieved CC				1.789		Approximate Actual Confidence Coefficient achieved by UTL				0.825	
1382					Approximate Sample Size needed to achieve specified CC				59			
1383	95% Percentile Bootstrap UTL with		95% Coverage		0.34		95% BCA Bootstrap UTL with 95% Coverage				0.33	
1384	95% UPL				0.333		90% Percentile				0.33	
1385	90% Chebyshev UPL				0.369		95% Percentile				0.33	
1386	95% Chebyshev UPL				0.41		99% Percentile				0.337	
1387	95% USL				0.34							
1388												
1389	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
1390	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
1391	and consists of observations collected from clean unimpacted locations.											
1392	The use of USL tends to provide a balance between false positives and false negatives provided the data											
1393	represents a background data set and when many onsite observations need to be compared with the BTV.											
1394												
1395	METHYLENE CHLORIDE (ug/L)											
1396												
1397	General Statistics											
1398	Total Number of Observations				43		Number of Missing Observations				0	
1399	Number of Distinct Observations				1							
1400	Number of Detects				0		Number of Non-Detects				43	

	A	B	C	D	E	F	G	H	I	J	K	L
1401	Number of Distinct Detects					0	Number of Distinct Non-Detects					1
1402	Minimum Detect					N/A	Minimum Non-Detect					1
1403	Maximum Detect					N/A	Maximum Non-Detect					1
1404	Variance Detected					N/A	Percent Non-Detects					100%
1405	Mean Detected					N/A	SD Detected					N/A
1406	Mean of Detected Logged Data					N/A	SD of Detected Logged Data					N/A
1407												
1408	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
1409	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
1410	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
1411												
1412	The data set for variable METHYLENE CHLORIDE (ug/L) was not processed!											
1413												
1414												
1415	NITRATE-NITROGEN (mg/L)											
1416												
1417	General Statistics											
1418	Total Number of Observations					42	Number of Distinct Observations					35
1419	Minimum					4.9	First Quartile					19.4
1420	Second Largest					29	Median					22.6
1421	Maximum					31.7	Third Quartile					25.9
1422	Mean					21.12	SD					6.554
1423	Coefficient of Variation					0.31	Skewness					-0.996
1424	Mean of logged Data					2.98	SD of logged Data					0.425
1425												
1426	Critical Values for Background Threshold Values (BTVs)											
1427	Tolerance Factor K (For UTL)					2.104	d2max (for USL)					2.887
1428												
1429	Normal GOF Test											
1430	Shapiro Wilk Test Statistic					0.85	Shapiro Wilk GOF Test					
1431	5% Shapiro Wilk Critical Value					0.942	Data Not Normal at 5% Significance Level					
1432	Lilliefors Test Statistic					0.191	Lilliefors GOF Test					
1433	5% Lilliefors Critical Value					0.135	Data Not Normal at 5% Significance Level					
1434	Data Not Normal at 5% Significance Level											
1435												
1436	Background Statistics Assuming Normal Distribution											
1437	95% UTL with 95% Coverage		34.91			90% Percentile (z)					29.52	
1438	95% UPL (t)		32.28			95% Percentile (z)					31.9	
1439	95% USL		40.04			99% Percentile (z)					36.37	
1440												
1441	Gamma GOF Test											
1442	A-D Test Statistic					2.985	Anderson-Darling Gamma GOF Test					
1443	5% A-D Critical Value					0.75	Data Not Gamma Distributed at 5% Significance Level					
1444	K-S Test Statistic					0.231	Kolmogorov-Smirnov Gamma GOF Test					
1445	5% K-S Critical Value					0.137	Data Not Gamma Distributed at 5% Significance Level					
1446	Data Not Gamma Distributed at 5% Significance Level											
1447												
1448	Gamma Statistics											
1449	k hat (MLE)					7.267	k star (bias corrected MLE)					6.764
1450	Theta hat (MLE)					2.906	Theta star (bias corrected MLE)					3.122

	A	B	C	D	E	F	G	H	I	J	K	L
1451	nu hat (MLE)				610.4	nu star (bias corrected)				568.2		
1452	MLE Mean (bias corrected)				21.12	MLE Sd (bias corrected)				8.12		
1453												
1454	Background Statistics Assuming Gamma Distribution											
1455	95% Wilson Hilferty (WH) Approx. Gamma UPL				36.31	90% Percentile				31.96		
1456	95% Hawkins Wixley (HW) Approx. Gamma UPL				37.16	95% Percentile				36		
1457	95% WH Approx. Gamma UTL with 95% Coverage				41.05	99% Percentile				44.43		
1458	95% HW Approx. Gamma UTL with 95% Coverage				42.4							
1459	95% WH USL				51.47	95% HW USL				54.23		
1460												
1461	Lognormal GOF Test											
1462	Shapiro Wilk Test Statistic				0.756	Shapiro Wilk Lognormal GOF Test						
1463	5% Shapiro Wilk Critical Value				0.942	Data Not Lognormal at 5% Significance Level						
1464	Lilliefors Test Statistic				0.253	Lilliefors Lognormal GOF Test						
1465	5% Lilliefors Critical Value				0.135	Data Not Lognormal at 5% Significance Level						
1466	Data Not Lognormal at 5% Significance Level											
1467												
1468	Background Statistics assuming Lognormal Distribution											
1469	95% UTL with 95% Coverage				48.16	90% Percentile (z)				33.95		
1470	95% UPL (t)				40.61	95% Percentile (z)				39.62		
1471	95% USL				67.22	99% Percentile (z)				52.95		
1472												
1473	Nonparametric Distribution Free Background Statistics											
1474	Data do not follow a Discernible Distribution (0.05)											
1475												
1476	Nonparametric Upper Limits for Background Threshold Values											
1477	Order of Statistic, r				42	95% UTL with 95% Coverage				31.7		
1478	Approx, f used to compute achieved CC				2.211	Approximate Actual Confidence Coefficient achieved by UTL				0.884		
1479						Approximate Sample Size needed to achieve specified CC				59		
1480	95% Percentile Bootstrap UTL with 95% Coverage				31.51	95% BCA Bootstrap UTL with 95% Coverage				31.51		
1481	95% UPL				28.82	90% Percentile				26.7		
1482	90% Chebyshev UPL				41.01	95% Percentile				27.77		
1483	95% Chebyshev UPL				50.03	99% Percentile				30.59		
1484	95% USL				31.7							
1485												
1486	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
1487	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
1488	and consists of observations collected from clean unimpacted locations.											
1489	The use of USL tends to provide a balance between false positives and false negatives provided the data											
1490	represents a background data set and when many onsite observations need to be compared with the BTV.											
1491												
1492	pH-FIELD (SU)											
1493												
1494	General Statistics											
1495	Total Number of Observations				41	Number of Distinct Observations				36		
1496	Minimum				3.91	First Quartile				4.55		
1497	Second Largest				6.38	Median				4.74		
1498	Maximum				6.55	Third Quartile				5.15		
1499	Mean				4.946	SD				0.573		
1500	Coefficient of Variation				0.116	Skewness				1.102		

	A	B	C	D	E	F	G	H	I	J	K	L
1501	Mean of logged Data					1.592	SD of logged Data					0.111
1502												
1503	Critical Values for Background Threshold Values (BTVs)											
1504	Tolerance Factor K (For UTL)				2.11	d2max (for USL)					2.878	
1505												
1506	Normal GOF Test											
1507	Shapiro Wilk Test Statistic				0.889	Shapiro Wilk GOF Test						
1508	5% Shapiro Wilk Critical Value				0.941	Data Not Normal at 5% Significance Level						
1509	Lilliefors Test Statistic				0.179	Lilliefors GOF Test						
1510	5% Lilliefors Critical Value				0.137	Data Not Normal at 5% Significance Level						
1511	Data Not Normal at 5% Significance Level											
1512												
1513	Background Statistics Assuming Normal Distribution											
1514	95% UTL with	95% Coverage			6.155	90% Percentile (z)					5.68	
1515			95% UPL (t)			5.923	95% Percentile (z)					5.889
1516			95% USL			6.595	99% Percentile (z)					6.279
1517												
1518	Gamma GOF Test											
1519	A-D Test Statistic				1.6	Anderson-Darling Gamma GOF Test						
1520	5% A-D Critical Value				0.747	Data Not Gamma Distributed at 5% Significance Level						
1521	K-S Test Statistic				0.178	Kolmogorov-Smirnov Gamma GOF Test						
1522	5% K-S Critical Value				0.137	Data Not Gamma Distributed at 5% Significance Level						
1523	Data Not Gamma Distributed at 5% Significance Level											
1524												
1525	Gamma Statistics											
1526	k hat (MLE)				81.46	k star (bias corrected MLE)					75.51	
1527	Theta hat (MLE)				0.0607	Theta star (bias corrected MLE)					0.0655	
1528	nu hat (MLE)				6679	nu star (bias corrected)					6192	
1529	MLE Mean (bias corrected)				4.946	MLE Sd (bias corrected)					0.569	
1530												
1531	Background Statistics Assuming Gamma Distribution											
1532	95% Wilson Hilferty (WH) Approx. Gamma UPL				5.93	90% Percentile					5.688	
1533	95% Hawkins Wixley (HW) Approx. Gamma UPL				5.931	95% Percentile					5.918	
1534	95% WH Approx. Gamma UTL with	95% Coverage			6.188	99% Percentile					6.366	
1535	95% HW Approx. Gamma UTL with	95% Coverage			6.193							
1536			95% WH USL			6.696	95% HW USL					6.711
1537												
1538	Lognormal GOF Test											
1539	Shapiro Wilk Test Statistic				0.915	Shapiro Wilk Lognormal GOF Test						
1540	5% Shapiro Wilk Critical Value				0.941	Data Not Lognormal at 5% Significance Level						
1541	Lilliefors Test Statistic				0.173	Lilliefors Lognormal GOF Test						
1542	5% Lilliefors Critical Value				0.137	Data Not Lognormal at 5% Significance Level						
1543	Data Not Lognormal at 5% Significance Level											
1544												
1545	Background Statistics assuming Lognormal Distribution											
1546	95% UTL with	95% Coverage			6.209	90% Percentile (z)					5.665	
1547			95% UPL (t)			5.936	95% Percentile (z)					5.897
1548			95% USL			6.759	99% Percentile (z)					6.359
1549												
1550	Nonparametric Distribution Free Background Statistics											

	A	B	C	D	E	F	G	H	I	J	K	L
1551	Data do not follow a Discernible Distribution (0.05)											
1552												
1553	Nonparametric Upper Limits for Background Threshold Values											
1554	Order of Statistic, r				41		95% UTL with 95% Coverage				6.55	
1555	Approx, f used to compute achieved CC				2.158		Approximate Actual Confidence Coefficient achieved by UTL				0.878	
1556							Approximate Sample Size needed to achieve specified CC				59	
1557	95% Percentile Bootstrap UTL with 95% Coverage				6.55		95% BCA Bootstrap UTL with 95% Coverage				6.38	
1558	95% UPL				6.337		90% Percentile				5.79	
1559	90% Chebyshev UPL				6.686		95% Percentile				5.95	
1560	95% Chebyshev UPL				7.474		99% Percentile				6.482	
1561	95% USL				6.55							
1562												
1563	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
1564	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
1565	and consists of observations collected from clean unimpacted locations.											
1566	The use of USL tends to provide a balance between false positives and false negatives provided the data											
1567	represents a background data set and when many onsite observations need to be compared with the BTV.											
1568												
1569	pH-LAB (SU)											
1570												
1571	General Statistics											
1572	Total Number of Observations				40		Number of Distinct Observations				35	
1573	Minimum				4.84		First Quartile				5.41	
1574	Second Largest				7.24		Median				5.585	
1575	Maximum				7.81		Third Quartile				5.748	
1576	Mean				5.706		SD				0.608	
1577	Coefficient of Variation				0.107		Skewness				1.768	
1578	Mean of logged Data				1.736		SD of logged Data				0.0993	
1579												
1580	Critical Values for Background Threshold Values (BTVs)											
1581	Tolerance Factor K (For UTL)				2.117		d2max (for USL)				2.868	
1582												
1583	Normal GOF Test											
1584	Shapiro Wilk Test Statistic				0.814		Shapiro Wilk GOF Test					
1585	5% Shapiro Wilk Critical Value				0.94		Data Not Normal at 5% Significance Level					
1586	Lilliefors Test Statistic				0.233		Lilliefors GOF Test					
1587	5% Lilliefors Critical Value				0.139		Data Not Normal at 5% Significance Level					
1588	Data Not Normal at 5% Significance Level											
1589												
1590	Background Statistics Assuming Normal Distribution											
1591	95% UTL with 95% Coverage				6.993		90% Percentile (z)				6.485	
1592	95% UPL (t)				6.743		95% Percentile (z)				6.706	
1593	95% USL				7.45		99% Percentile (z)				7.121	
1594												
1595	Gamma GOF Test											
1596	A-D Test Statistic				2.442		Anderson-Darling Gamma GOF Test					
1597	5% A-D Critical Value				0.747		Data Not Gamma Distributed at 5% Significance Level					
1598	K-S Test Statistic				0.218		Kolmogorov-Smirnov Gamma GOF Test					
1599	5% K-S Critical Value				0.139		Data Not Gamma Distributed at 5% Significance Level					
1600	Data Not Gamma Distributed at 5% Significance Level											

	A	B	C	D	E	F	G	H	I	J	K	L
1601												
1602	Gamma Statistics											
1603	k hat (MLE)				99.5		k star (bias corrected MLE)				92.05	
1604	Theta hat (MLE)				0.0573		Theta star (bias corrected MLE)				0.062	
1605	nu hat (MLE)				7960		nu star (bias corrected)				7364	
1606	MLE Mean (bias corrected)				5.706		MLE Sd (bias corrected)				0.595	
1607												
1608	Background Statistics Assuming Gamma Distribution											
1609	95% Wilson Hilferty (WH) Approx. Gamma UPL				6.73		90% Percentile				6.48	
1610	95% Hawkins Wixley (HW) Approx. Gamma UPL				6.729		95% Percentile				6.718	
1611	95% WH Approx. Gamma UTL with 95% Coverage				6.999		99% Percentile				7.179	
1612	95% HW Approx. Gamma UTL with 95% Coverage				7.001							
1613	95% WH USL				7.509		95% HW USL				7.518	
1614												
1615	Lognormal GOF Test											
1616	Shapiro Wilk Test Statistic				0.856		Shapiro Wilk Lognormal GOF Test					
1617	5% Shapiro Wilk Critical Value				0.94		Data Not Lognormal at 5% Significance Level					
1618	Lilliefors Test Statistic				0.212		Lilliefors Lognormal GOF Test					
1619	5% Lilliefors Critical Value				0.139		Data Not Lognormal at 5% Significance Level					
1620	Data Not Lognormal at 5% Significance Level											
1621												
1622	Background Statistics assuming Lognormal Distribution											
1623	95% UTL with 95% Coverage				7.006		90% Percentile (z)				6.448	
1624	95% UPL (t)				6.725		95% Percentile (z)				6.685	
1625	95% USL				7.548		99% Percentile (z)				7.153	
1626												
1627	Nonparametric Distribution Free Background Statistics											
1628	Data do not follow a Discernible Distribution (0.05)											
1629												
1630	Nonparametric Upper Limits for Background Threshold Values											
1631	Order of Statistic, r				40		95% UTL with 95% Coverage				7.81	
1632	Approx, f used to compute achieved CC				2.105		Approximate Actual Confidence Coefficient achieved by UTL				0.871	
1633							Approximate Sample Size needed to achieve specified CC				59	
1634	95% Percentile Bootstrap UTL with 95% Coverage				7.81		95% BCA Bootstrap UTL with 95% Coverage				7.81	
1635	95% UPL				7.236		90% Percentile				6.45	
1636	90% Chebyshev UPL				7.553		95% Percentile				7.155	
1637	95% Chebyshev UPL				8.39		99% Percentile				7.588	
1638	95% USL				7.81							
1639												
1640	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
1641	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
1642	and consists of observations collected from clean unimpacted locations.											
1643	The use of USL tends to provide a balance between false positives and false negatives provided the data											
1644	represents a background data set and when many onsite observations need to be compared with the BTV.											
1645												
1646	POTASSIUM, DISSOLVED (mg/L)											
1647												
1648	General Statistics											
1649	Total Number of Observations				10		Number of Distinct Observations				7	
1650	Minimum				0.95		First Quartile				1.1	

	A	B	C	D	E	F	G	H	I	J	K	L		
1651	Second Largest					1.6						Median	1.2	
1652	Maximum					1.6						Third Quartile	1.375	
1653	Mean					1.245						SD	0.229	
1654	Coefficient of Variation					0.184						Skewness	0.54	
1655	Mean of logged Data					0.204						SD of logged Data	0.181	
1656														
1657	Critical Values for Background Threshold Values (BTVs)													
1658	Tolerance Factor K (For UTL)					2.911						d2max (for USL)	2.176	
1659														
1660	Normal GOF Test													
1661	Shapiro Wilk Test Statistic					0.92						Shapiro Wilk GOF Test		
1662	5% Shapiro Wilk Critical Value					0.842						Data appear Normal at 5% Significance Level		
1663	Lilliefors Test Statistic					0.178						Lilliefors GOF Test		
1664	5% Lilliefors Critical Value					0.262						Data appear Normal at 5% Significance Level		
1665	Data appear Normal at 5% Significance Level													
1666														
1667	Background Statistics Assuming Normal Distribution													
1668	95% UTL with	95% Coverage				1.912						90% Percentile (z)	1.539	
1669						95% UPL (t)	1.685						95% Percentile (z)	1.622
1670						95% USL	1.743						99% Percentile (z)	1.778
1671														
1672	Gamma GOF Test													
1673	A-D Test Statistic					0.306						Anderson-Darling Gamma GOF Test		
1674	5% A-D Critical Value					0.724						Detected data appear Gamma Distributed at 5% Significance Level		
1675	K-S Test Statistic					0.162						Kolmogorov-Smirnov Gamma GOF Test		
1676	5% K-S Critical Value					0.266						Detected data appear Gamma Distributed at 5% Significance Level		
1677	Detected data appear Gamma Distributed at 5% Significance Level													
1678														
1679	Gamma Statistics													
1680	k hat (MLE)					33.83						k star (bias corrected MLE)	23.75	
1681	Theta hat (MLE)					0.0368						Theta star (bias corrected MLE)	0.0524	
1682	nu hat (MLE)					676.5						nu star (bias corrected)	474.9	
1683	MLE Mean (bias corrected)					1.245						MLE Sd (bias corrected)	0.255	
1684														
1685	Background Statistics Assuming Gamma Distribution													
1686	95% Wilson Hilferty (WH) Approx. Gamma UPL					1.716						90% Percentile	1.582	
1687	95% Hawkins Wixley (HW) Approx. Gamma UPL					1.721						95% Percentile	1.693	
1688	95% WH Approx. Gamma UTL with	95% Coverage				2.007						99% Percentile	1.915	
1689	95% HW Approx. Gamma UTL with	95% Coverage				2.023								
1690						95% WH USL	1.788						95% HW USL	1.795
1691														
1692	Lognormal GOF Test													
1693	Shapiro Wilk Test Statistic					0.941						Shapiro Wilk Lognormal GOF Test		
1694	5% Shapiro Wilk Critical Value					0.842						Data appear Lognormal at 5% Significance Level		
1695	Lilliefors Test Statistic					0.148						Lilliefors Lognormal GOF Test		
1696	5% Lilliefors Critical Value					0.262						Data appear Lognormal at 5% Significance Level		
1697	Data appear Lognormal at 5% Significance Level													
1698														
1699	Background Statistics assuming Lognormal Distribution													
1700	95% UTL with	95% Coverage				2.076						90% Percentile (z)	1.546	

	A	B	C	D	E	F	G	H	I	J	K	L
1701					95% UPL (t)	1.736				95% Percentile (z)		1.651
1702					95% USL	1.818				99% Percentile (z)		1.868
1703												
1704	Nonparametric Distribution Free Background Statistics											
1705	Data appear Normal at 5% Significance Level											
1706												
1707	Nonparametric Upper Limits for Background Threshold Values											
1708				Order of Statistic, r	10					95% UTL with 95% Coverage		1.6
1709				Approx, f used to compute achieved CC	0.526					Approximate Actual Confidence Coefficient achieved by UTL		0.401
1710										Approximate Sample Size needed to achieve specified CC		59
1711				95% Percentile Bootstrap UTL with 95% Coverage	1.6					95% BCA Bootstrap UTL with 95% Coverage		1.6
1712				95% UPL	1.6					90% Percentile		1.6
1713				90% Chebyshev UPL	1.966					95% Percentile		1.6
1714				95% Chebyshev UPL	2.292					99% Percentile		1.6
1715				95% USL	1.6							
1716												
1717	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
1718	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
1719	and consists of observations collected from clean unimpacted locations.											
1720	The use of USL tends to provide a balance between false positives and false negatives provided the data											
1721	represents a background data set and when many onsite observations need to be compared with the BTV.											
1722												
1723	POTASSIUM, TOTAL (mg/L)											
1724												
1725	General Statistics											
1726				Total Number of Observations	41					Number of Distinct Observations		17
1727				Minimum	0					First Quartile		1.2
1728				Second Largest	11.1					Median		1.2
1729				Maximum	14.4					Third Quartile		1.9
1730				Mean	2.209					SD		2.749
1731				Coefficient of Variation	1.245					Skewness		3.356
1732												
1733	Critical Values for Background Threshold Values (BTVs)											
1734				Tolerance Factor K (For UTL)	2.11					d2max (for USL)		2.878
1735												
1736	Normal GOF Test											
1737				Shapiro Wilk Test Statistic	0.505					Shapiro Wilk GOF Test		
1738				5% Shapiro Wilk Critical Value	0.941					Data Not Normal at 5% Significance Level		
1739				Lilliefors Test Statistic	0.35					Lilliefors GOF Test		
1740				5% Lilliefors Critical Value	0.137					Data Not Normal at 5% Significance Level		
1741	Data Not Normal at 5% Significance Level											
1742												
1743	Background Statistics Assuming Normal Distribution											
1744				95% UTL with 95% Coverage	8.01					90% Percentile (z)		5.732
1745				95% UPL (t)	6.894					95% Percentile (z)		6.731
1746				95% USL	10.12					99% Percentile (z)		8.604
1747												
1748	Gamma Statistics											
1749	Gamma Statistics Not Available											
1750												

	A	B	C	D	E	F	G	H	I	J	K	L
1751	Cannot Compute Gamma Statistics!											
1752												
1753	Cannot Compute Log Statistics											
1754												
1755	Nonparametric Distribution Free Background Statistics											
1756	Data do not follow a Discernible Distribution (0.05)											
1757												
1758	Nonparametric Upper Limits for Background Threshold Values											
1759	Order of Statistic, r				41		95% UTL with 95% Coverage				14.4	
1760	Approx, f used to compute achieved CC				2.158		Approximate Actual Confidence Coefficient achieved by UTL				0.878	
1761					Approximate Sample Size needed to achieve specified CC				59			
1762	95% Percentile Bootstrap UTL with 95% Coverage				14.4		95% BCA Bootstrap UTL with 95% Coverage				11.1	
1763	95% UPL				10.69		90% Percentile				3.1	
1764	90% Chebyshev UPL				10.56		95% Percentile				7	
1765	95% Chebyshev UPL				14.34		99% Percentile				13.08	
1766	95% USL				14.4							
1767												
1768	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
1769	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
1770	and consists of observations collected from clean unimpacted locations.											
1771	The use of USL tends to provide a balance between false positives and false negatives provided the data											
1772	represents a background data set and when many onsite observations need to be compared with the BTV.											
1773												
1774	SODIUM, DISSOLVED (mg/L)											
1775												
1776	General Statistics											
1777	Total Number of Observations				11		Number of Distinct Observations				9	
1778	Minimum				13.7		First Quartile				14.2	
1779	Second Largest				20.6		Median				16.2	
1780	Maximum				20.9		Third Quartile				18.75	
1781	Mean				16.76		SD				2.667	
1782	Coefficient of Variation				0.159		Skewness				0.437	
1783	Mean of logged Data				2.808		SD of logged Data				0.157	
1784												
1785	Critical Values for Background Threshold Values (BTVs)											
1786	Tolerance Factor K (For UTL)				2.815		d2max (for USL)				2.234	
1787												
1788	Normal GOF Test											
1789	Shapiro Wilk Test Statistic				0.895		Shapiro Wilk GOF Test					
1790	5% Shapiro Wilk Critical Value				0.85		Data appear Normal at 5% Significance Level					
1791	Lilliefors Test Statistic				0.186		Lilliefors GOF Test					
1792	5% Lilliefors Critical Value				0.251		Data appear Normal at 5% Significance Level					
1793	Data appear Normal at 5% Significance Level											
1794												
1795	Background Statistics Assuming Normal Distribution											
1796	95% UTL with 95% Coverage				24.27		90% Percentile (z)				20.18	
1797	95% UPL (t)				21.81		95% Percentile (z)				21.15	
1798	95% USL				22.72		99% Percentile (z)				22.97	
1799												
1800	Gamma GOF Test											

	A	B	C	D	E	F	G	H	I	J	K	L
1801	A-D Test Statistic					0.469	Anderson-Darling Gamma GOF Test					
1802	5% A-D Critical Value					0.728	Detected data appear Gamma Distributed at 5% Significance Level					
1803	K-S Test Statistic					0.201	Kolmogorov-Smirnov Gamma GOF Test					
1804	5% K-S Critical Value					0.255	Detected data appear Gamma Distributed at 5% Significance Level					
1805	Detected data appear Gamma Distributed at 5% Significance Level											
1806												
1807	Gamma Statistics											
1808	k hat (MLE)					44.49	k star (bias corrected MLE)					32.41
1809	Theta hat (MLE)					0.377	Theta star (bias corrected MLE)					0.517
1810	nu hat (MLE)					978.7	nu star (bias corrected)					713.1
1811	MLE Mean (bias corrected)					16.76	MLE Sd (bias corrected)					2.944
1812												
1813	Background Statistics Assuming Gamma Distribution											
1814	95% Wilson Hilferty (WH) Approx. Gamma UPL					22.11	90% Percentile					20.63
1815	95% Hawkins Wixley (HW) Approx. Gamma UPL					22.16	95% Percentile					21.88
1816	95% WH Approx. Gamma UTL with 95% Coverage					25.17	99% Percentile					24.36
1817	95% HW Approx. Gamma UTL with 95% Coverage					25.31						
1818	95% WH USL					23.21	95% HW USL					23.29
1819												
1820	Lognormal GOF Test											
1821	Shapiro Wilk Test Statistic					0.902	Shapiro Wilk Lognormal GOF Test					
1822	5% Shapiro Wilk Critical Value					0.85	Data appear Lognormal at 5% Significance Level					
1823	Lilliefors Test Statistic					0.19	Lilliefors Lognormal GOF Test					
1824	5% Lilliefors Critical Value					0.251	Data appear Lognormal at 5% Significance Level					
1825	Data appear Lognormal at 5% Significance Level											
1826												
1827	Background Statistics assuming Lognormal Distribution											
1828	95% UTL with 95% Coverage					25.77	90% Percentile (z)					20.26
1829	95% UPL (t)					22.3	95% Percentile (z)					21.45
1830	95% USL					23.53	99% Percentile (z)					23.87
1831												
1832	Nonparametric Distribution Free Background Statistics											
1833	Data appear Normal at 5% Significance Level											
1834												
1835	Nonparametric Upper Limits for Background Threshold Values											
1836	Order of Statistic, r					11	95% UTL with 95% Coverage					20.9
1837	Approx, f used to compute achieved CC					0.579	Approximate Actual Confidence Coefficient achieved by UTL					0.431
1838							Approximate Sample Size needed to achieve specified CC					59
1839	95% Percentile Bootstrap UTL with 95% Coverage					20.9	95% BCA Bootstrap UTL with 95% Coverage					20.9
1840	95% UPL					20.9	90% Percentile					20.6
1841	90% Chebyshev UPL					25.12	95% Percentile					20.75
1842	95% Chebyshev UPL					28.91	99% Percentile					20.87
1843	95% USL					20.9						
1844												
1845	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
1846	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
1847	and consists of observations collected from clean unimpacted locations.											
1848	The use of USL tends to provide a balance between false positives and false negatives provided the data											
1849	represents a background data set and when many onsite observations need to be compared with the BTV.											
1850												

	A	B	C	D	E	F	G	H	I	J	K	L
1851	SODIUM, TOTAL (mg/L)											
1852												
1853	General Statistics											
1854	Total Number of Observations				39		Number of Distinct Observations				29	
1855	Minimum				13.7		First Quartile				14.45	
1856	Second Largest				22.3		Median				15.9	
1857	Maximum				24		Third Quartile				18.4	
1858	Mean				16.64		SD				2.526	
1859	Coefficient of Variation				0.152		Skewness				1.041	
1860	Mean of logged Data				2.801		SD of logged Data				0.144	
1861												
1862	Critical Values for Background Threshold Values (BTVs)											
1863	Tolerance Factor K (For UTL)				2.124		d2max (for USL)				2.857	
1864												
1865	Normal GOF Test											
1866	Shapiro Wilk Test Statistic				0.881		Shapiro Wilk GOF Test					
1867	5% Shapiro Wilk Critical Value				0.939		Data Not Normal at 5% Significance Level					
1868	Lilliefors Test Statistic				0.161		Lilliefors GOF Test					
1869	5% Lilliefors Critical Value				0.14		Data Not Normal at 5% Significance Level					
1870	Data Not Normal at 5% Significance Level											
1871												
1872	Background Statistics Assuming Normal Distribution											
1873	95% UTL with 95% Coverage		22		90% Percentile (z)				19.87			
1874	95% UPL (t)		20.95		95% Percentile (z)				20.79			
1875	95% USL		23.85		99% Percentile (z)				22.51			
1876												
1877	Gamma GOF Test											
1878	A-D Test Statistic				1.373		Anderson-Darling Gamma GOF Test					
1879	5% A-D Critical Value				0.746		Data Not Gamma Distributed at 5% Significance Level					
1880	K-S Test Statistic				0.157		Kolmogorov-Smirnov Gamma GOF Test					
1881	5% K-S Critical Value				0.141		Data Not Gamma Distributed at 5% Significance Level					
1882	Data Not Gamma Distributed at 5% Significance Level											
1883												
1884	Gamma Statistics											
1885	k hat (MLE)				48.02		k star (bias corrected MLE)				44.34	
1886	Theta hat (MLE)				0.346		Theta star (bias corrected MLE)				0.375	
1887	nu hat (MLE)				3746		nu star (bias corrected)				3459	
1888	MLE Mean (bias corrected)				16.64		MLE Sd (bias corrected)				2.498	
1889												
1890	Background Statistics Assuming Gamma Distribution											
1891	95% Wilson Hilferty (WH) Approx. Gamma UPL				21.01		90% Percentile				19.91	
1892	95% Hawkins Wixley (HW) Approx. Gamma UPL				21.02		95% Percentile				20.95	
1893	95% WH Approx. Gamma UTL with 95% Coverage		22.21		99% Percentile				22.99			
1894	95% HW Approx. Gamma UTL with 95% Coverage		22.25									
1895	95% WH USL		24.45		95% HW USL				24.54			
1896												
1897	Lognormal GOF Test											
1898	Shapiro Wilk Test Statistic				0.902		Shapiro Wilk Lognormal GOF Test					
1899	5% Shapiro Wilk Critical Value				0.939		Data Not Lognormal at 5% Significance Level					
1900	Lilliefors Test Statistic				0.155		Lilliefors Lognormal GOF Test					

	A	B	C	D	E	F	G	H	I	J	K	L
1901	5% Lilliefors Critical Value					0.14	Data Not Lognormal at 5% Significance Level					
1902	Data Not Lognormal at 5% Significance Level											
1903												
1904	Background Statistics assuming Lognormal Distribution											
1905	95% UTL with 95% Coverage				22.35	90% Percentile (z)				19.8		
1906	95% UPL (t)				21.05	95% Percentile (z)				20.86		
1907	95% USL				24.84	99% Percentile (z)				23.01		
1908												
1909	Nonparametric Distribution Free Background Statistics											
1910	Data do not follow a Discernible Distribution (0.05)											
1911												
1912	Nonparametric Upper Limits for Background Threshold Values											
1913	Order of Statistic, r				39	95% UTL with 95% Coverage				24		
1914	Approx, f used to compute achieved CC				2.053	Approximate Actual Confidence Coefficient achieved by UTL				0.865		
1915						Approximate Sample Size needed to achieve specified CC				59		
1916	95% Percentile Bootstrap UTL with 95% Coverage				24	95% BCA Bootstrap UTL with 95% Coverage				24		
1917	95% UPL				22.3	90% Percentile				20		
1918	90% Chebyshev UPL				24.31	95% Percentile				20.5		
1919	95% Chebyshev UPL				27.79	99% Percentile				23.35		
1920	95% USL				24							
1921												
1922	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
1923	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
1924	and consists of observations collected from clean unimpacted locations.											
1925	The use of USL tends to provide a balance between false positives and false negatives provided the data											
1926	represents a background data set and when many onsite observations need to be compared with the BTV.											
1927												
1928	SPEC. COND., FIELD (umhos/cm)											
1929												
1930	General Statistics											
1931	Total Number of Observations				40	Number of Distinct Observations				31		
1932	Minimum				215	First Quartile				310.5		
1933	Second Largest				590	Median				331		
1934	Maximum				661	Third Quartile				350.5		
1935	Mean				339.1	SD				81.01		
1936	Coefficient of Variation				0.239	Skewness				2.268		
1937	Mean of logged Data				5.803	SD of logged Data				0.209		
1938												
1939	Critical Values for Background Threshold Values (BTVs)											
1940	Tolerance Factor K (For UTL)				2.117	d2max (for USL)				2.868		
1941												
1942	Normal GOF Test											
1943	Shapiro Wilk Test Statistic				0.751	Shapiro Wilk GOF Test						
1944	5% Shapiro Wilk Critical Value				0.94	Data Not Normal at 5% Significance Level						
1945	Lilliefors Test Statistic				0.273	Lilliefors GOF Test						
1946	5% Lilliefors Critical Value				0.139	Data Not Normal at 5% Significance Level						
1947	Data Not Normal at 5% Significance Level											
1948												
1949	Background Statistics Assuming Normal Distribution											
1950	95% UTL with 95% Coverage				510.6	90% Percentile (z)				442.9		

	A	B	C	D	E	F	G	H	I	J	K	L	
1951					95% UPL (t)	477.3				95% Percentile (z)		472.3	
1952					95% USL	571.4				99% Percentile (z)		527.6	
1953													
1954	Gamma GOF Test												
1955					A-D Test Statistic	2.536		Anderson-Darling Gamma GOF Test					
1956					5% A-D Critical Value	0.747		Data Not Gamma Distributed at 5% Significance Level					
1957					K-S Test Statistic	0.237		Kolmogorov-Smirnov Gamma GOF Test					
1958					5% K-S Critical Value	0.139		Data Not Gamma Distributed at 5% Significance Level					
1959	Data Not Gamma Distributed at 5% Significance Level												
1960													
1961	Gamma Statistics												
1962					k hat (MLE)	21.98				k star (bias corrected MLE)		20.35	
1963					Theta hat (MLE)	15.43				Theta star (bias corrected MLE)		16.67	
1964					nu hat (MLE)	1758				nu star (bias corrected)		1628	
1965					MLE Mean (bias corrected)	339.1				MLE Sd (bias corrected)		75.18	
1966													
1967	Background Statistics Assuming Gamma Distribution												
1968					95% Wilson Hilferty (WH) Approx. Gamma UPL	473.2				90% Percentile		438.3	
1969					95% Hawkins Wixley (HW) Approx. Gamma UPL	473.1				95% Percentile		471.5	
1970					95% WH Approx. Gamma UTL with 95% Coverage	511.8				99% Percentile		538	
1971					95% HW Approx. Gamma UTL with 95% Coverage	512.6							
1972					95% WH USL	587.4				95% HW USL		590.8	
1973													
1974	Lognormal GOF Test												
1975					Shapiro Wilk Test Statistic	0.858		Shapiro Wilk Lognormal GOF Test					
1976					5% Shapiro Wilk Critical Value	0.94		Data Not Lognormal at 5% Significance Level					
1977					Lilliefors Test Statistic	0.221		Lilliefors Lognormal GOF Test					
1978					5% Lilliefors Critical Value	0.139		Data Not Lognormal at 5% Significance Level					
1979	Data Not Lognormal at 5% Significance Level												
1980													
1981	Background Statistics assuming Lognormal Distribution												
1982					95% UTL with 95% Coverage	516.1				90% Percentile (z)		433.3	
1983					95% UPL (t)	473.5				95% Percentile (z)		467.5	
1984					95% USL	603.8				99% Percentile (z)		539.2	
1985													
1986	Nonparametric Distribution Free Background Statistics												
1987	Data do not follow a Discernible Distribution (0.05)												
1988													
1989	Nonparametric Upper Limits for Background Threshold Values												
1990					Order of Statistic, r	40				95% UTL with 95% Coverage		661	
1991					Approx, f used to compute achieved CC	2.105		Approximate Actual Confidence Coefficient achieved by UTL				0.871	
1992								Approximate Sample Size needed to achieve specified CC				59	
1993					95% Percentile Bootstrap UTL with 95% Coverage	661				95% BCA Bootstrap UTL with 95% Coverage		661	
1994					95% UPL	583.8				90% Percentile		372	
1995					90% Chebyshev UPL	585.1				95% Percentile		472.2	
1996					95% Chebyshev UPL	696.6				99% Percentile		633.3	
1997					95% USL	661							
1998													
1999	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.												
2000	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers												

	A	B	C	D	E	F	G	H	I	J	K	L
2001	and consists of observations collected from clean unimpacted locations.											
2002	The use of USL tends to provide a balance between false positives and false negatives provided the data											
2003	represents a background data set and when many onsite observations need to be compared with the BTV.											
2004												
2005	SPEC. COND., LAB (umhos/cm)											
2006												
2007	General Statistics											
2008	Total Number of Observations				40		Number of Distinct Observations				33	
2009	Minimum				242		First Quartile				284.3	
2010	Second Largest				589		Median				302	
2011	Maximum				656		Third Quartile				336.5	
2012	Mean				325.1		SD				81.84	
2013	Coefficient of Variation				0.252		Skewness				2.68	
2014	Mean of logged Data				5.761		SD of logged Data				0.205	
2015												
2016	Critical Values for Background Threshold Values (BTVs)											
2017	Tolerance Factor K (For UTL)				2.117		d2max (for USL)				2.868	
2018												
2019	Normal GOF Test											
2020	Shapiro Wilk Test Statistic				0.715		Shapiro Wilk GOF Test					
2021	5% Shapiro Wilk Critical Value				0.94		Data Not Normal at 5% Significance Level					
2022	Lilliefors Test Statistic				0.212		Lilliefors GOF Test					
2023	5% Lilliefors Critical Value				0.139		Data Not Normal at 5% Significance Level					
2024	Data Not Normal at 5% Significance Level											
2025												
2026	Background Statistics Assuming Normal Distribution											
2027	95% UTL with 95% Coverage		498.3		90% Percentile (z)				430			
2028	95% UPL (t)		464.7		95% Percentile (z)				459.7			
2029	95% USL		559.7		99% Percentile (z)				515.5			
2030												
2031	Gamma GOF Test											
2032	A-D Test Statistic				2.214		Anderson-Darling Gamma GOF Test					
2033	5% A-D Critical Value				0.747		Data Not Gamma Distributed at 5% Significance Level					
2034	K-S Test Statistic				0.175		Kolmogorov-Smirnov Gamma GOF Test					
2035	5% K-S Critical Value				0.139		Data Not Gamma Distributed at 5% Significance Level					
2036	Data Not Gamma Distributed at 5% Significance Level											
2037												
2038	Gamma Statistics											
2039	k hat (MLE)				21.58		k star (bias corrected MLE)				19.98	
2040	Theta hat (MLE)				15.06		Theta star (bias corrected MLE)				16.27	
2041	nu hat (MLE)				1727		nu star (bias corrected)				1598	
2042	MLE Mean (bias corrected)				325.1		MLE Sd (bias corrected)				72.73	
2043												
2044	Background Statistics Assuming Gamma Distribution											
2045	95% Wilson Hilferty (WH) Approx. Gamma UPL		454.7		90% Percentile				421.1			
2046	95% Hawkins Wixley (HW) Approx. Gamma UPL		453.7		95% Percentile				453.2			
2047	95% WH Approx. Gamma UTL with 95% Coverage		492.1		99% Percentile				517.7			
2048	95% HW Approx. Gamma UTL with 95% Coverage		491.6									
2049	95% WH USL		565.5		95% HW USL				566.9			
2050												

	A	B	C	D	E	F	G	H	I	J	K	L	
2051	Lognormal GOF Test												
2052	Shapiro Wilk Test Statistic					0.837	Shapiro Wilk Lognormal GOF Test						
2053	5% Shapiro Wilk Critical Value					0.94	Data Not Lognormal at 5% Significance Level						
2054	Lilliefors Test Statistic					0.156	Lilliefors Lognormal GOF Test						
2055	5% Lilliefors Critical Value					0.139	Data Not Lognormal at 5% Significance Level						
2056	Data Not Lognormal at 5% Significance Level												
2057													
2058	Background Statistics assuming Lognormal Distribution												
2059	95% UTL with 95% Coverage				490.5					90% Percentile (z)		413.2	
2060	95% UPL (t)				450.8					95% Percentile (z)		445.2	
2061	95% USL				572.2					99% Percentile (z)		512	
2062													
2063	Nonparametric Distribution Free Background Statistics												
2064	Data do not follow a Discernible Distribution (0.05)												
2065													
2066	Nonparametric Upper Limits for Background Threshold Values												
2067	Order of Statistic, r				40	95% UTL with 95% Coverage				656			
2068	Approx, f used to compute achieved CC				2.105	Approximate Actual Confidence Coefficient achieved by UTL				0.871			
2069						Approximate Sample Size needed to achieve specified CC				59			
2070	95% Percentile Bootstrap UTL with 95% Coverage				656	95% BCA Bootstrap UTL with 95% Coverage				656			
2071	95% UPL				582.1	90% Percentile				382.7			
2072	90% Chebyshev UPL				573.6	95% Percentile				458.9			
2073	95% Chebyshev UPL				686.2	99% Percentile				629.9			
2074	95% USL				656								
2075													
2076	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.												
2077	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers												
2078	and consists of observations collected from clean unimpacted locations.												
2079	The use of USL tends to provide a balance between false positives and false negatives provided the data												
2080	represents a background data set and when many onsite observations need to be compared with the BTV.												
2081													
2082	SULFATE (mg/L)												
2083													
2084	General Statistics												
2085	Total Number of Observations				40	Number of Distinct Observations				37			
2086	Minimum				6.9	First Quartile				9.775			
2087	Second Largest				60.4	Median				12.3			
2088	Maximum				74	Third Quartile				23.08			
2089	Mean				20.21	SD				16.16			
2090	Coefficient of Variation				0.8	Skewness				1.747			
2091	Mean of logged Data				2.771	SD of logged Data				0.653			
2092													
2093	Critical Values for Background Threshold Values (BTVs)												
2094	Tolerance Factor K (For UTL)				2.117	d2max (for USL)				2.868			
2095													
2096	Normal GOF Test												
2097	Shapiro Wilk Test Statistic					0.758	Shapiro Wilk GOF Test						
2098	5% Shapiro Wilk Critical Value					0.94	Data Not Normal at 5% Significance Level						
2099	Lilliefors Test Statistic					0.252	Lilliefors GOF Test						
2100	5% Lilliefors Critical Value					0.139	Data Not Normal at 5% Significance Level						

	A	B	C	D	E	F	G	H	I	J	K	L	
2101	Data Not Normal at 5% Significance Level												
2102													
2103	Background Statistics Assuming Normal Distribution												
2104	95% UTL with 95% Coverage				54.43						90% Percentile (z)		40.92
2105	95% UPL (t)				47.78						95% Percentile (z)		46.8
2106	95% USL				66.56						99% Percentile (z)		57.81
2107													
2108	Gamma GOF Test												
2109	A-D Test Statistic				2.141		Anderson-Darling Gamma GOF Test						
2110	5% A-D Critical Value				0.758		Data Not Gamma Distributed at 5% Significance Level						
2111	K-S Test Statistic				0.234		Kolmogorov-Smirnov Gamma GOF Test						
2112	5% K-S Critical Value				0.141		Data Not Gamma Distributed at 5% Significance Level						
2113	Data Not Gamma Distributed at 5% Significance Level												
2114													
2115	Gamma Statistics												
2116	k hat (MLE)				2.277		k star (bias corrected MLE)				2.123		
2117	Theta hat (MLE)				8.873		Theta star (bias corrected MLE)				9.518		
2118	nu hat (MLE)				182.2		nu star (bias corrected)				169.9		
2119	MLE Mean (bias corrected)				20.21		MLE Sd (bias corrected)				13.87		
2120													
2121	Background Statistics Assuming Gamma Distribution												
2122	95% Wilson Hilferty (WH) Approx. Gamma UPL				47.39		90% Percentile				38.75		
2123	95% Hawkins Wixley (HW) Approx. Gamma UPL				47.57		95% Percentile				47.04		
2124	95% WH Approx. Gamma UTL with 95% Coverage				57.92		99% Percentile				65.35		
2125	95% HW Approx. Gamma UTL with 95% Coverage				58.95								
2126	95% WH USL				80.95		95% HW USL				84.82		
2127													
2128	Lognormal GOF Test												
2129	Shapiro Wilk Test Statistic				0.896		Shapiro Wilk Lognormal GOF Test						
2130	5% Shapiro Wilk Critical Value				0.94		Data Not Lognormal at 5% Significance Level						
2131	Lilliefors Test Statistic				0.208		Lilliefors Lognormal GOF Test						
2132	5% Lilliefors Critical Value				0.139		Data Not Lognormal at 5% Significance Level						
2133	Data Not Lognormal at 5% Significance Level												
2134													
2135	Background Statistics assuming Lognormal Distribution												
2136	95% UTL with 95% Coverage				63.64		90% Percentile (z)				36.88		
2137	95% UPL (t)				48.65		95% Percentile (z)				46.75		
2138	95% USL				103.9		99% Percentile (z)				72.96		
2139													
2140	Nonparametric Distribution Free Background Statistics												
2141	Data do not follow a Discernible Distribution (0.05)												
2142													
2143	Nonparametric Upper Limits for Background Threshold Values												
2144	Order of Statistic, r				40		95% UTL with 95% Coverage				74		
2145	Approx, f used to compute achieved CC				2.105		Approximate Actual Confidence Coefficient achieved by UTL				0.871		
2146							Approximate Sample Size needed to achieve specified CC				59		
2147	95% Percentile Bootstrap UTL with 95% Coverage				74		95% BCA Bootstrap UTL with 95% Coverage				74		
2148	95% UPL				59.97		90% Percentile				42.7		
2149	90% Chebyshev UPL				69.3		95% Percentile				52.14		
2150	95% Chebyshev UPL				91.54		99% Percentile				68.7		

	A	B	C	D	E	F	G	H	I	J	K	L
2151					95% USL	74						
2152												
2153					Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.							
2154					Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers							
2155					and consists of observations collected from clean unimpacted locations.							
2156					The use of USL tends to provide a balance between false positives and false negatives provided the data							
2157					represents a background data set and when many onsite observations need to be compared with the BTV.							
2158												
2159	Total Dissolved Solids (mg/L)											
2160												
2161	General Statistics											
2162					Total Number of Observations	40				Number of Distinct Observations	38	
2163					Minimum	135				First Quartile	196.5	
2164					Second Largest	381				Median	238.5	
2165					Maximum	433				Third Quartile	262.8	
2166					Mean	236.9				SD	59.67	
2167					Coefficient of Variation	0.252				Skewness	1.056	
2168					Mean of logged Data	5.438				SD of logged Data	0.243	
2169												
2170	Critical Values for Background Threshold Values (BTVs)											
2171					Tolerance Factor K (For UTL)	2.117				d2max (for USL)	2.868	
2172												
2173	Normal GOF Test											
2174					Shapiro Wilk Test Statistic	0.928				Shapiro Wilk GOF Test		
2175					5% Shapiro Wilk Critical Value	0.94				Data Not Normal at 5% Significance Level		
2176					Lilliefors Test Statistic	0.119				Lilliefors GOF Test		
2177					5% Lilliefors Critical Value	0.139				Data appear Normal at 5% Significance Level		
2178	Data appear Approximate Normal at 5% Significance Level											
2179												
2180	Background Statistics Assuming Normal Distribution											
2181					95% UTL with 95% Coverage	363.2				90% Percentile (z)	313.3	
2182					95% UPL (t)	338.6				95% Percentile (z)	335	
2183					95% USL	408				99% Percentile (z)	375.7	
2184												
2185	Gamma GOF Test											
2186					A-D Test Statistic	0.57				Anderson-Darling Gamma GOF Test		
2187					5% A-D Critical Value	0.747				Detected data appear Gamma Distributed at 5% Significance Level		
2188					K-S Test Statistic	0.094				Kolmogorov-Smirnov Gamma GOF Test		
2189					5% K-S Critical Value	0.139				Detected data appear Gamma Distributed at 5% Significance Level		
2190	Detected data appear Gamma Distributed at 5% Significance Level											
2191												
2192	Gamma Statistics											
2193					k hat (MLE)	17.33				k star (bias corrected MLE)	16.05	
2194					Theta hat (MLE)	13.67				Theta star (bias corrected MLE)	14.76	
2195					nu hat (MLE)	1386				nu star (bias corrected)	1284	
2196					MLE Mean (bias corrected)	236.9				MLE Sd (bias corrected)	59.13	
2197												
2198	Background Statistics Assuming Gamma Distribution											
2199					95% Wilson Hilferty (WH) Approx. Gamma UPL	343.4				90% Percentile	315.1	
2200					95% Hawkins Wixley (HW) Approx. Gamma UPL	344.4				95% Percentile	341.7	

	A	B	C	D	E	F	G	H	I	J	K	L
2201	95% WH Approx. Gamma UTL with 95% Coverage				374.7	99% Percentile				395.6		
2202	95% HW Approx. Gamma UTL with 95% Coverage				376.8							
2203	95% WH USL				436.5	95% HW USL				441.8		
2204												
2205	Lognormal GOF Test											
2206	Shapiro Wilk Test Statistic				0.97	Shapiro Wilk Lognormal GOF Test						
2207	5% Shapiro Wilk Critical Value				0.94	Data appear Lognormal at 5% Significance Level						
2208	Lilliefors Test Statistic				0.109	Lilliefors Lognormal GOF Test						
2209	5% Lilliefors Critical Value				0.139	Data appear Lognormal at 5% Significance Level						
2210	Data appear Lognormal at 5% Significance Level											
2211												
2212	Background Statistics assuming Lognormal Distribution											
2213	95% UTL with 95% Coverage		384.7	90% Percentile (z)				314.1				
2214	95% UPL (t)		348.2	95% Percentile (z)				343				
2215	95% USL		461.7	99% Percentile (z)				404.8				
2216												
2217	Nonparametric Distribution Free Background Statistics											
2218	Data appear Approximate Normal at 5% Significance Level											
2219												
2220	Nonparametric Upper Limits for Background Threshold Values											
2221	Order of Statistic, r		40	95% UTL with 95% Coverage				433				
2222	Approx, f used to compute achieved CC		2.105	Approximate Actual Confidence Coefficient achieved by UTL				0.871				
2223				Approximate Sample Size needed to achieve specified CC				59				
2224	95% Percentile Bootstrap UTL with 95% Coverage		433	95% BCA Bootstrap UTL with 95% Coverage				433				
2225	95% UPL		378.5	90% Percentile				294.7				
2226	90% Chebyshev UPL		418.1	95% Percentile				333.5				
2227	95% Chebyshev UPL		500.2	99% Percentile				412.7				
2228	95% USL		433									
2229												
2230	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
2231	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
2232	and consists of observations collected from clean unimpacted locations.											
2233	The use of USL tends to provide a balance between false positives and false negatives provided the data											
2234	represents a background data set and when many onsite observations need to be compared with the BTV.											
2235												
2236	TETRACHLOROETHENE (ug/L)											
2237												
2238	General Statistics											
2239	Total Number of Observations		43	Number of Missing Observations				0				
2240	Number of Distinct Observations		1									
2241	Number of Detects		0	Number of Non-Detects				43				
2242	Number of Distinct Detects		0	Number of Distinct Non-Detects				1				
2243	Minimum Detect		N/A	Minimum Non-Detect				1				
2244	Maximum Detect		N/A	Maximum Non-Detect				1				
2245	Variance Detected		N/A	Percent Non-Detects				100%				
2246	Mean Detected		N/A	SD Detected				N/A				
2247	Mean of Detected Logged Data		N/A	SD of Detected Logged Data				N/A				
2248												
2249	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
2250	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											

	A	B	C	D	E	F	G	H	I	J	K	L
2251	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
2252												
2253	The data set for variable TETRACHLOROETHENE (ug/L) was not processed!											
2254												
2255												
2256	TOTAL ORGANIC CARBON (mg/L)											
2257												
2258	General Statistics											
2259	Total Number of Observations				40				Number of Missing Observations			
2260	Number of Distinct Observations				12							
2261	Number of Detects				11				Number of Non-Detects			
2262	Number of Distinct Detects				10				Number of Distinct Non-Detects			
2263	Minimum Detect				0.6				Minimum Non-Detect			
2264	Maximum Detect				1.4				Maximum Non-Detect			
2265	Variance Detected				0.0717				Percent Non-Detects			
2266	Mean Detected				0.895				SD Detected			
2267	Mean of Detected Logged Data				-0.151				SD of Detected Logged Data			
2268												
2269	Critical Values for Background Threshold Values (BTVs)											
2270	Tolerance Factor K (For UTL)				2.117				d2max (for USL)			
2271												
2272	Normal GOF Test on Detects Only											
2273	Shapiro Wilk Test Statistic				0.912				Shapiro Wilk GOF Test			
2274	5% Shapiro Wilk Critical Value				0.85				Detected Data appear Normal at 5% Significance Level			
2275	Lilliefors Test Statistic				0.173				Lilliefors GOF Test			
2276	5% Lilliefors Critical Value				0.251				Detected Data appear Normal at 5% Significance Level			
2277	Detected Data appear Normal at 5% Significance Level											
2278												
2279	Kaplan Meier (KM) Background Statistics Assuming Normal Distribution											
2280	KM Mean				0.696				KM SD			
2281	95% UTL95% Coverage				1.148				95% KM UPL (t)			
2282	90% KM Percentile (z)				0.97				95% KM Percentile (z)			
2283	99% KM Percentile (z)				1.193				95% KM USL			
2284												
2285	DL/2 Substitution Background Statistics Assuming Normal Distribution											
2286	Mean				0.584				SD			
2287	95% UTL95% Coverage				1.109				95% UPL (t)			
2288	90% Percentile (z)				0.901				95% Percentile (z)			
2289	99% Percentile (z)				1.161				95% USL			
2290	DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons											
2291												
2292	Gamma GOF Tests on Detected Observations Only											
2293	A-D Test Statistic				0.379				Anderson-Darling GOF Test			
2294	5% A-D Critical Value				0.729				Detected data appear Gamma Distributed at 5% Significance Level			
2295	K-S Test Statistic				0.169				Kolmogorov-Smirnov GOF			
2296	5% K-S Critical Value				0.255				Detected data appear Gamma Distributed at 5% Significance Level			
2297	Detected data appear Gamma Distributed at 5% Significance Level											
2298												
2299	Gamma Statistics on Detected Data Only											
2300	k hat (MLE)				12.92				k star (bias corrected MLE)			

	A	B	C	D	E	F	G	H	I	J	K	L
2301				Theta hat (MLE)		0.0692				Theta star (bias corrected MLE)		0.0946
2302				nu hat (MLE)		284.2				nu star (bias corrected)		208.1
2303				MLE Mean (bias corrected)		0.895						
2304				MLE Sd (bias corrected)		0.291				95% Percentile of Chisquare (2kstar)		30.03
2305												
2306	Gamma ROS Statistics using Imputed Non-Detects											
2307	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
2308	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)											
2309	For such situations, GROS method may yield incorrect values of UCLs and BTVs											
2310	This is especially true when the sample size is small.											
2311	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
2312				Minimum		0.188				Mean		0.651
2313				Maximum		1.4				Median		0.627
2314				SD		0.274				CV		0.421
2315				k hat (MLE)		5.527				k star (bias corrected MLE)		5.129
2316				Theta hat (MLE)		0.118				Theta star (bias corrected MLE)		0.127
2317				nu hat (MLE)		442.1				nu star (bias corrected)		410.3
2318				MLE Mean (bias corrected)		0.651				MLE Sd (bias corrected)		0.288
2319				95% Percentile of Chisquare (2kstar)		18.66				90% Percentile		1.037
2320				95% Percentile		1.185				99% Percentile		1.499
2321	The following statistics are computed using Gamma ROS Statistics on Imputed Data											
2322	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods											
2323					WH	HW				WH	HW	
2324				95% Approx. Gamma UTL with 95% Coverage		1.379				95% Approx. Gamma UPL		1.197
2325				95% Gamma USL		1.756						1.215
2326												
2327	Estimates of Gamma Parameters using KM Estimates											
2328				Mean (KM)		0.696				SD (KM)		0.213
2329				Variance (KM)		0.0456				SE of Mean (KM)		0.0474
2330				k hat (KM)		10.63				k star (KM)		9.847
2331				nu hat (KM)		850.2				nu star (KM)		787.8
2332				theta hat (KM)		0.0655				theta star (KM)		0.0707
2333				80% gamma percentile (KM)		0.873				90% gamma percentile (KM)		0.991
2334				95% gamma percentile (KM)		1.096				99% gamma percentile (KM)		1.313
2335												
2336	The following statistics are computed using gamma distribution and KM estimates											
2337	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods											
2338					WH	HW				WH	HW	
2339				95% Approx. Gamma UTL with 95% Coverage		1.173				95% Approx. Gamma UPL		1.062
2340				95% KM Gamma Percentile		1.046				95% Gamma USL		1.394
2341												
2342	Lognormal GOF Test on Detected Observations Only											
2343				Shapiro Wilk Test Statistic		0.932				Shapiro Wilk GOF Test		
2344				5% Shapiro Wilk Critical Value		0.85				Detected Data appear Lognormal at 5% Significance Level		
2345				Lilliefors Test Statistic		0.165				Lilliefors GOF Test		
2346				5% Lilliefors Critical Value		0.251				Detected Data appear Lognormal at 5% Significance Level		
2347	Detected Data appear Lognormal at 5% Significance Level											
2348												
2349	Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects											
2350				Mean in Original Scale		0.677				Mean in Log Scale		-0.448

	A	B	C	D	E	F	G	H	I	J	K	L
2351	SD in Original Scale					0.241	SD in Log Scale					0.343
2352	95% UTL95% Coverage					1.322	95% BCA UTL95% Coverage					1.21
2353	95% Bootstrap (%) UTL95% Coverage					1.4	95% UPL (t)					1.148
2354	90% Percentile (z)					0.992	95% Percentile (z)					1.124
2355	99% Percentile (z)					1.42	95% USL					1.71
2356												
2357	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution											
2358	KM Mean of Logged Data					-0.403	95% KM UTL (Lognormal)95% Coverage					1.196
2359	KM SD of Logged Data					0.275	95% KM UPL (Lognormal)					1.068
2360	95% KM Percentile Lognormal (z)					1.05	95% KM USL (Lognormal)					1.47
2361												
2362	Background DL/2 Statistics Assuming Lognormal Distribution											
2363	Mean in Original Scale					0.584	Mean in Log Scale					-0.613
2364	SD in Original Scale					0.248	SD in Log Scale					0.384
2365	95% UTL95% Coverage					1.221	95% UPL (t)					1.043
2366	90% Percentile (z)					0.886	95% Percentile (z)					1.019
2367	99% Percentile (z)					1.323	95% USL					1.629
2368	DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.											
2369												
2370	Nonparametric Distribution Free Background Statistics											
2371	Data appear to follow a Discernible Distribution at 5% Significance Level											
2372												
2373	Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)											
2374	Order of Statistic, r					40	95% UTL with95% Coverage					1.4
2375	Approx, f used to compute achieved CC					2.105	Approximate Actual Confidence Coefficient achieved by UTL					0.871
2376	Approximate Sample Size needed to achieve specified CC					59	95% UPL					1.195
2377	95% USL					1.4	95% KM Chebyshev UPL					1.638
2378												
2379	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
2380	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
2381	and consists of observations collected from clean unimpacted locations.											
2382	The use of USL tends to provide a balance between false positives and false negatives provided the data											
2383	represents a background data set and when many onsite observations need to be compared with the BTV.											
2384												
2385	TOLUENE (mg/)											
2386												
2387	General Statistics											
2388	Total Number of Observations					42	Number of Missing Observations					0
2389	Number of Distinct Observations					1						
2390	Number of Detects					0	Number of Non-Detects					42
2391	Number of Distinct Detects					0	Number of Distinct Non-Detects					1
2392	Minimum Detect					N/A	Minimum Non-Detect					1
2393	Maximum Detect					N/A	Maximum Non-Detect					1
2394	Variance Detected					N/A	Percent Non-Detects					100%
2395	Mean Detected					N/A	SD Detected					N/A
2396	Mean of Detected Logged Data					N/A	SD of Detected Logged Data					N/A
2397												
2398	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
2399	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
2400	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											

	A	B	C	D	E	F	G	H	I	J	K	L
2401												
2402	The data set for variable TOLUENE (mg/) was not processed!											
2403												
2404												
2405	TOTAL PHENOLICS (mg/L)											
2406												
2407	General Statistics											
2408	Total Number of Observations				43		Number of Missing Observations				0	
2409	Number of Distinct Observations				2							
2410	Number of Detects				2		Number of Non-Detects				41	
2411	Number of Distinct Detects				1		Number of Distinct Non-Detects				2	
2412	Minimum Detect				0.01		Minimum Non-Detect				0.005	
2413	Maximum Detect				0.01		Maximum Non-Detect				0.01	
2414	Variance Detected				0		Percent Non-Detects				95.35%	
2415	Mean Detected				0.01		SD Detected				0	
2416	Mean of Detected Logged Data				-4.605		SD of Detected Logged Data				0	
2417												
2418	Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!											
2419	It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).											
2420												
2421	The data set for variable TOTAL PHENOLICS (mg/L) was not processed!											
2422												
2423												
2424	TRANS 1,2-DICHLOROETHENE (ug/L)											
2425												
2426	General Statistics											
2427	Total Number of Observations				43		Number of Missing Observations				0	
2428	Number of Distinct Observations				1							
2429	Number of Detects				0		Number of Non-Detects				43	
2430	Number of Distinct Detects				0		Number of Distinct Non-Detects				1	
2431	Minimum Detect				N/A		Minimum Non-Detect				1	
2432	Maximum Detect				N/A		Maximum Non-Detect				1	
2433	Variance Detected				N/A		Percent Non-Detects				100%	
2434	Mean Detected				N/A		SD Detected				N/A	
2435	Mean of Detected Logged Data				N/A		SD of Detected Logged Data				N/A	
2436												
2437	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
2438	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
2439	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
2440												
2441	The data set for variable TRANS 1,2-DICHLOROETHENE (ug/L) was not processed!											
2442												
2443												
2444	TRICHLOROETHENE (ug/L)											
2445												
2446	General Statistics											
2447	Total Number of Observations				43		Number of Missing Observations				0	
2448	Number of Distinct Observations				1							
2449	Number of Detects				0		Number of Non-Detects				43	
2450	Number of Distinct Detects				0		Number of Distinct Non-Detects				1	

	A	B	C	D	E	F	G	H	I	J	K	L
2451				Minimum Detect		N/A				Minimum Non-Detect		1
2452				Maximum Detect		N/A				Maximum Non-Detect		1
2453				Variance Detected		N/A				Percent Non-Detects		100%
2454				Mean Detected		N/A				SD Detected		N/A
2455				Mean of Detected Logged Data		N/A				SD of Detected Logged Data		N/A
2456												
2457	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
2458	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
2459	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
2460												
2461	The data set for variable TRICHLOROETHENE (ug/L) was not processed!											
2462												
2463												
2464	TURBIDITY (NTU)											
2465												
2466	General Statistics											
2467				Total Number of Observations		43				Number of Missing Observations		0
2468				Number of Distinct Observations		29						
2469				Number of Detects		37				Number of Non-Detects		6
2470				Number of Distinct Detects		28				Number of Distinct Non-Detects		1
2471				Minimum Detect		0.11				Minimum Non-Detect		0.1
2472				Maximum Detect		10.1				Maximum Non-Detect		0.1
2473				Variance Detected		3.434				Percent Non-Detects		13.95%
2474				Mean Detected		0.826				SD Detected		1.853
2475				Mean of Detected Logged Data		-1.038				SD of Detected Logged Data		1.05
2476												
2477	Critical Values for Background Threshold Values (BTVs)											
2478				Tolerance Factor K (For UTL)		2.097				d2max (for USL)		2.897
2479												
2480	Normal GOF Test on Detects Only											
2481				Shapiro Wilk Test Statistic		0.405				Shapiro Wilk GOF Test		
2482				5% Shapiro Wilk Critical Value		0.936				Data Not Normal at 5% Significance Level		
2483				Lilliefors Test Statistic		0.401				Lilliefors GOF Test		
2484				5% Lilliefors Critical Value		0.144				Data Not Normal at 5% Significance Level		
2485	Data Not Normal at 5% Significance Level											
2486												
2487	Kaplan Meier (KM) Background Statistics Assuming Normal Distribution											
2488				KM Mean		0.725				KM SD		1.714
2489				95% UTL95% Coverage		4.32				95% KM UPL (t)		3.641
2490				90% KM Percentile (z)		2.922				95% KM Percentile (z)		3.544
2491				99% KM Percentile (z)		4.713				95% KM USL		5.691
2492												
2493	DL/2 Substitution Background Statistics Assuming Normal Distribution											
2494				Mean		0.718				SD		1.737
2495				95% UTL95% Coverage		4.361				95% UPL (t)		3.673
2496				90% Percentile (z)		2.944				95% Percentile (z)		3.575
2497				99% Percentile (z)		4.759				95% USL		5.75
2498	DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons											
2499												
2500	Gamma GOF Tests on Detected Observations Only											

	A	B	C	D	E	F	G	H	I	J	K	L		
2501	A-D Test Statistic					4.196	Anderson-Darling GOF Test							
2502	5% A-D Critical Value					0.792	Data Not Gamma Distributed at 5% Significance Level							
2503	K-S Test Statistic					0.277	Kolmogorov-Smirnov GOF							
2504	5% K-S Critical Value					0.151	Data Not Gamma Distributed at 5% Significance Level							
2505	Data Not Gamma Distributed at 5% Significance Level													
2506														
2507	Gamma Statistics on Detected Data Only													
2508	k hat (MLE)					0.712	k star (bias corrected MLE)					0.673		
2509	Theta hat (MLE)					1.16	Theta star (bias corrected MLE)					1.228		
2510	nu hat (MLE)					52.71	nu star (bias corrected)					49.77		
2511	MLE Mean (bias corrected)					0.826								
2512	MLE Sd (bias corrected)					1.007	95% Percentile of Chisquare (2kstar)					4.645		
2513														
2514	Gamma ROS Statistics using Imputed Non-Detects													
2515	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs													
2516	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)													
2517	For such situations, GROS method may yield incorrect values of UCLs and BTVs													
2518	This is especially true when the sample size is small.													
2519	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates													
2520	Minimum					0.01	Mean					0.712		
2521	Maximum					10.1	Median					0.24		
2522	SD					1.739	CV					2.443		
2523	k hat (MLE)					0.527	k star (bias corrected MLE)					0.506		
2524	Theta hat (MLE)					1.352	Theta star (bias corrected MLE)					1.408		
2525	nu hat (MLE)					45.31	nu star (bias corrected)					43.48		
2526	MLE Mean (bias corrected)					0.712	MLE Sd (bias corrected)					1.001		
2527	95% Percentile of Chisquare (2kstar)					3.869	90% Percentile					1.922		
2528	95% Percentile					2.725	99% Percentile					4.696		
2529	The following statistics are computed using Gamma ROS Statistics on Imputed Data													
2530	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods													
2531						WH	HW						WH	HW
2532	95% Approx. Gamma UTL with 95% Coverage					3.247	3.347	95% Approx. Gamma UPL					2.354	2.333
2533	95% Gamma USL					5.685	6.369							
2534														
2535	Estimates of Gamma Parameters using KM Estimates													
2536	Mean (KM)					0.725	SD (KM)					1.714		
2537	Variance (KM)					2.939	SE of Mean (KM)					0.265		
2538	k hat (KM)					0.179	k star (KM)					0.182		
2539	nu hat (KM)					15.37	nu star (KM)					15.63		
2540	theta hat (KM)					4.055	theta star (KM)					3.987		
2541	80% gamma percentile (KM)					0.904	90% gamma percentile (KM)					2.186		
2542	95% gamma percentile (KM)					3.825	99% gamma percentile (KM)					8.409		
2543														
2544	The following statistics are computed using gamma distribution and KM estimates													
2545	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods													
2546						WH	HW						WH	HW
2547	95% Approx. Gamma UTL with 95% Coverage					2.941	2.831	95% Approx. Gamma UPL					2.186	2.055
2548	95% KM Gamma Percentile					2.091	1.959	95% Gamma USL					4.957	5.047
2549														
2550	Lognormal GOF Test on Detected Observations Only													

	A	B	C	D	E	F	G	H	I	J	K	L
2551	Shapiro Wilk Test Statistic					0.855	Shapiro Wilk GOF Test					
2552	5% Shapiro Wilk Critical Value					0.936	Data Not Lognormal at 5% Significance Level					
2553	Lilliefors Test Statistic					0.143	Lilliefors GOF Test					
2554	5% Lilliefors Critical Value					0.144	Detected Data appear Lognormal at 5% Significance Level					
2555	Detected Data appear Approximate Lognormal at 5% Significance Level											
2556												
2557	Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects											
2558	Mean in Original Scale					0.716	Mean in Log Scale					-1.362
2559	SD in Original Scale					1.738	SD in Log Scale					1.278
2560	95% UTL95% Coverage					3.735	95% BCA UTL95% Coverage					9.417
2561	95% Bootstrap (%) UTL95% Coverage					9.638	95% UPL (t)					2.252
2562	90% Percentile (z)					1.317	95% Percentile (z)					2.095
2563	99% Percentile (z)					5.005	95% USL					10.38
2564												
2565	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution											
2566	KM Mean of Logged Data					-1.214	95% KM UTL (Lognormal)95% Coverage					2.722
2567	KM SD of Logged Data					1.056	95% KM UPL (Lognormal)					1.792
2568	95% KM Percentile Lognormal (z)					1.688	95% KM USL (Lognormal)					6.336
2569												
2570	Background DL/2 Statistics Assuming Lognormal Distribution											
2571	Mean in Original Scale					0.718	Mean in Log Scale					-1.311
2572	SD in Original Scale					1.737	SD in Log Scale					1.19
2573	95% UTL95% Coverage					3.273	95% UPL (t)					2.043
2574	90% Percentile (z)					1.24	95% Percentile (z)					1.91
2575	99% Percentile (z)					4.3	95% USL					8.482
2576	DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.											
2577												
2578	Nonparametric Distribution Free Background Statistics											
2579	Data appear to follow a Discernible Distribution at 5% Significance Level											
2580												
2581	Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)											
2582	Order of Statistic, r					43	95% UTL with95% Coverage					10.1
2583	Approx, f used to compute achieved CC					2.263	Approximate Actual Confidence Coefficient achieved by UTL					0.89
2584	Approximate Sample Size needed to achieve specified CC					59	95% UPL					5.038
2585	95% USL					10.1	95% KM Chebyshev UPL					8.283
2586												
2587	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
2588	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
2589	and consists of observations collected from clean unimpacted locations.											
2590	The use of USL tends to provide a balance between false positives and false negatives provided the data											
2591	represents a background data set and when many onsite observations need to be compared with the BTV.											
2592												
2593	VINYL CHLORIDE (ug/L)											
2594												
2595	General Statistics											
2596	Total Number of Observations					43	Number of Missing Observations					0
2597	Number of Distinct Observations					1						
2598	Number of Detects					0	Number of Non-Detects					43
2599	Number of Distinct Detects					0	Number of Distinct Non-Detects					1
2600	Minimum Detect					N/A	Minimum Non-Detect					1

	A	B	C	D	E	F	G	H	I	J	K	L
2601				Maximum Detect		N/A				Maximum Non-Detect		1
2602				Variance Detected		N/A				Percent Non-Detects		100%
2603				Mean Detected		N/A				SD Detected		N/A
2604				Mean of Detected Logged Data		N/A				SD of Detected Logged Data		N/A
2605												
2606	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
2607	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
2608	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
2609												
2610	The data set for variable VINYL CHLORIDE (ug/L) was not processed!											
2611												
2612												
2613	TOTAL XYLENES (ug/L)											
2614												
2615	General Statistics											
2616				Total Number of Observations		43				Number of Missing Observations		0
2617				Number of Distinct Observations		1						
2618				Number of Detects		0				Number of Non-Detects		43
2619				Number of Distinct Detects		0				Number of Distinct Non-Detects		1
2620				Minimum Detect		N/A				Minimum Non-Detect		3
2621				Maximum Detect		N/A				Maximum Non-Detect		3
2622				Variance Detected		N/A				Percent Non-Detects		100%
2623				Mean Detected		N/A				SD Detected		N/A
2624				Mean of Detected Logged Data		N/A				SD of Detected Logged Data		N/A
2625												
2626	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
2627	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
2628	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
2629												
2630	The data set for variable TOTAL XYLENES (ug/L) was not processed!											
2631												
2632												



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised
10/11/2019

DEP USE ONLY

Date Received

FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

This form must be fully and accurately completed. All required information must be typed or legibly printed in the spaces provided. If additional space is necessary, identify each attached sheet as Form 19, reference the item number and identify the date prepared. The "date prepared/revised" on any attached sheets needs to match the "date prepared/revised" on this page.

General Reference: Section 273.284
Federal Regulations, Subtitle D: 258.54 and Appendix I to Part 258.

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Frey Farm Landfill

Facility ID (as issued by DEP): 101389

SECTION B. FACILITY INFORMATION

Monitoring Wells must be designed and constructed in accordance with Department Standards. INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (D° MM' SS.S")

Monitoring Point Number: FFMP015W Well Spring Stream Other
 Upgradient/Upstream Downgradient/Downstream

Location (County): Lancaster County

Municipality: Manor Township

Sampling Point: Latitude: 39 ° 57 ' 36.43 " Longitude: 76 ° 27 ' 10.82 "

Depth to Water Level: 56.93 ft Measured from: Land Surface TOC

Casing Stickup: 1.90 ft Elevation of Water Level: 519.47 ft./MSL

Sampling Depth: 135 ft Volume of Water Column: 135.07 gal

Total Well Depth: 148.9 ft Sampling Method: Pumped Bailed Grab

Well Purged: Yes No Well Volumes Purged: 1.0

Sample Field Filtered (must be 0.45 micron)?: Yes No

Spring Flow Rate: gpm

Sample Date (mm/dd/yy): 8/19/2019 Sample Collection Time: 10:58

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

Were any holding times exceeded?: Yes No If yes, please explain in comments field.

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3052609001 Final Lab Analysis Completion Date: 8/28/2019

Name/Affiliation of Person who Filled Out Form: Nick R. Rogers

Comments: _____

I.D. No 101389

Monitoring Point No. FFMP015W

Sample Date 8/19/2019

FORM 19
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES
ANALYTES

1-Q. Inorganics (Enter all data in mg/l except as noted)

ANALYTE	VALUE ^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	D6919-09
BICARBONATE ALKALINITY	21	SM20-2320B
CALCIUM, TOTAL	9.3	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	12	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	67 ND	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	9.8	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	41	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	10.1	EPA 300
pH-FIELD (SU)	5.04	FIELD
pH-LAB (SU)	6.46	SM20-4500HB
POTASSIUM, TOTAL	2.2	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	22.6	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	269	FIELD
SPEC. COND., LAB (umhos/cm)	234	SW846 9050A
SULFATE	45.9	EPA 300
ALKALINITY	21	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	172	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	0.93	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.15	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

T Please indicate detection limit if analyte is not detected.

** Total and dissolved analysis required only in conjunction with additional annual metals sampling (see page 4).
Remaining quarterly samples only require total metals analysis.

I.D. No 101389

Monitoring Point No. FFMP015W

Sample Date 8/19/2019

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****2-Q. Organics (Enter all data in ug/l)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
CIS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
TRANS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

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General Reference: Section 273.284
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Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Frey Farm Landfill

Facility ID (as issued by DEP): 101389

SECTION B. FACILITY INFORMATION

Monitoring Wells must be designed and constructed in accordance with Department Standards. INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (D° MM' SS.S")

Monitoring Point Number: FFMP03AW Well Spring Stream Other
 Upgradient/Upstream Downgradient/Downstream

Location (County): Lancaster County

Municipality: Manor Township

Sampling Point: Latitude: 39 ° 57 ' 24.05 " Longitude: 76 ° 27 ' 30.58 "

Depth to Water Level: 50.14 ft Measured from: Land Surface TOC

Casing Stickup: 1.20 ft Elevation of Water Level: 540.76 ft./MSL

Sampling Depth: 130 ft Volume of Water Column: 142.55 gal

Total Well Depth: 147.2 ft Sampling Method: Pumped Bailed Grab

Well Purged: Yes No Well Volumes Purged: 0.9

Sample Field Filtered (must be 0.45 micron)?: Yes No

Spring Flow Rate: gpm

Sample Date (mm/dd/yy): 8/19/2019 Sample Collection Time: 12:11

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

Were any holding times exceeded?: Yes No If yes, please explain in comments field.

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3052609002 Final Lab Analysis Completion Date: 8/28/2019

Name/Affiliation of Person who Filled Out Form: Nick R. Rogers

Comments: _____

I.D. No 101389

Monitoring Point No. FFMP03AW

Sample Date 8/19/2019

FORM 19
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES
ANALYTES

1-Q. Inorganics (Enter all data in mg/l except as noted)

ANALYTE	VALUE ^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	D6919-09
BICARBONATE ALKALINITY	21	SM20-2320B
CALCIUM, TOTAL	17	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	27.5	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	67 ND	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	11	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	260	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	20	EPA 300
pH-FIELD (SU)	3.92	FIELD
pH-LAB (SU)	6.08	SM20-4500HB
POTASSIUM, TOTAL	1.4	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	12.4	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	287	FIELD
SPEC. COND., LAB (umhos/cm)	254	SW846 9050A
SULFATE	2.8	EPA 300
ALKALINITY	21	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	209	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	0.56	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.16	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

T Please indicate detection limit if analyte is not detected.

** Total and dissolved analysis required only in conjunction with additional annual metals sampling (see page 4).

Remaining quarterly samples only require total metals analysis.

I.D. No 101389

Monitoring Point No. FFMP03AW

Sample Date 8/19/2019

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****2-Q. Organics (Enter all data in ug/l)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
CIS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
TRANS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

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Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Frey Farm Landfill

Facility ID (as issued by DEP): 101389

SECTION B. FACILITY INFORMATION

Monitoring Wells must be designed and constructed in accordance with Department Standards. INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (D° MM' SS.S")

Monitoring Point Number: FFMP30RW Well Spring Stream Other
 Upgradient/Upstream Downgradient/Downstream

Location (County): Lancaster County

Municipality: Manor Township

Sampling Point: Latitude: 39 ° 57 ' 15.52 " Longitude: 76 ° 27 ' 26.8 "

Depth to Water Level: 36.31 ft Measured from: Land Surface TOC

Casing Stickup: 2.20 ft Elevation of Water Level: 525.99 ft./MSL

Sampling Depth: 85 ft Volume of Water Column: 78.85 gal

Total Well Depth: 90 ft Sampling Method: Pumped Bailed Grab

Well Purged: Yes No Well Volumes Purged: 1.4

Sample Field Filtered (must be 0.45 micron)?: Yes No

Spring Flow Rate: gpm

Sample Date (mm/dd/yy): 8/19/2019 Sample Collection Time: 13:41

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

Were any holding times exceeded?: Yes No If yes, please explain in comments field.

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3052609003 Final Lab Analysis Completion Date: 8/28/2019

Name/Affiliation of Person who Filled Out Form: Nick R. Rogers

Comments: _____

I.D. No 101389

Monitoring Point No. FFMP30RW

Sample Date 8/19/2019

FORM 19
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES
ANALYTES

1-Q. Inorganics (Enter all data in mg/l except as noted)

ANALYTE	VALUE ^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.135	D6919-09
BICARBONATE ALKALINITY	34	SM20-2320B
CALCIUM, TOTAL	37.6	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	219	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	77	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	14.9	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	2600	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	5.8	EPA 300
pH-FIELD (SU)	4.69	FIELD
pH-LAB (SU)	6.36	SM20-4500HB
POTASSIUM, TOTAL	5.3	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	110	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	899	FIELD
SPEC. COND., LAB (umhos/cm)	915	SW846 9050A
SULFATE	26.9	EPA 300
ALKALINITY	34	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	542	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	0.89	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	1.98	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

T Please indicate detection limit if analyte is not detected.

** Total and dissolved analysis required only in conjunction with additional annual metals sampling (see page 4).
Remaining quarterly samples only require total metals analysis.

I.D. No 101389

Monitoring Point No. FFMP30RW

Sample Date 8/19/2019

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****2-Q. Organics (Enter all data in ug/l)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
CIS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
TRANS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised
10/11/2019

DEP USE ONLY

Date Received

FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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General Reference: Section 273.284
Federal Regulations, Subtitle D: 258.54 and Appendix I to Part 258.

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Frey Farm Landfill

Facility ID (as issued by DEP): 101389

SECTION B. FACILITY INFORMATION

Monitoring Wells must be designed and constructed in accordance with Department Standards. INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (D° MM' SS.S")

Monitoring Point Number: FFMP04AW Well Spring Stream Other
 Upgradient/Upstream Downgradient/Downstream

Location (County): Lancaster County Municipality: Manor Township

Sampling Point: Latitude: 39 ° 57 ' 15.4 " Longitude: 76 ° 27 ' 26.58 "

Depth to Water Level: 35.66 ft Measured from: Land Surface TOC

Casing Stickup: 2.52 ft Elevation of Water Level: 525.06 ft./MSL

Sampling Depth: 146 ft Volume of Water Column: 390.46 gal

Total Well Depth: 301.52 ft Sampling Method: Pumped Bailed Grab

Well Purged: Yes No Well Volumes Purged: 0.8

Sample Field Filtered (must be 0.45 micron)?: Yes No

Spring Flow Rate: gpm

Sample Date (mm/dd/yy): 8/19/2019 Sample Collection Time: 14:49

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

Were any holding times exceeded?: Yes No If yes, please explain in comments field.

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3052609004 Final Lab Analysis Completion Date: 8/28/2019

Name/Affiliation of Person who Filled Out Form: Nick R. Rogers

Comments: _____

I.D. No 101389

Monitoring Point No. FFMP04AW

Sample Date 8/19/2019

FORM 19
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES
ANALYTES

1-Q. Inorganics (Enter all data in mg/l except as noted)

ANALYTE	VALUE ^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	D6919-09
BICARBONATE ALKALINITY	221	SM20-2320B
CALCIUM, TOTAL	152	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	317	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	67 ND	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	23.5	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	310	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	0.24	EPA 300
pH-FIELD (SU)	6.33	FIELD
pH-LAB (SU)	7.7	SM20-4500HB
POTASSIUM, TOTAL	2.3	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	90.8	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	1451	FIELD
SPEC. COND., LAB (umhos/cm)	1430	SW846 9050A
SULFATE	46.9	EPA 300
ALKALINITY	221	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	1030	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	0.89	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	1.4	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

T Please indicate detection limit if analyte is not detected.

** Total and dissolved analysis required only in conjunction with additional annual metals sampling (see page 4).
Remaining quarterly samples only require total metals analysis.

I.D. No 101389

Monitoring Point No. FFMP04AW

Sample Date 8/19/2019

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****2-Q. Organics (Enter all data in ug/l)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
CIS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
TRANS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised 10/11/2019
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Date Received

FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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General Reference: Section 273.284
Federal Regulations, Subtitle D: 258.54 and Appendix I to Part 258.

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana
Site Name: Frey Farm Landfill
Facility ID (as issued by DEP): 101389

SECTION B. FACILITY INFORMATION

Monitoring Wells must be designed and constructed in accordance with Department Standards. INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (D° MM' SS.S")

Monitoring Point Number: FFMP017W Well Spring Stream Other
 Upgradient/Upstream Downgradient/Downstream

Location (County): Lancaster County Municipality: Manor Township

Sampling Point: Latitude: 39 ° 57 ' 8.5 " Longitude: 76 ° 27 ' 6.17 "

Depth to Water Level: 41.04 ft Measured from: Land Surface TOC

Casing Stickup: 2.00 ft Elevation of Water Level: 439.66 ft./MSL

Sampling Depth: 135 ft Volume of Water Column: 160.76 gal

Total Well Depth: 150.5 ft Sampling Method: Pumped Bailed Grab

Well Purged: Yes No Well Volumes Purged: 1.0

Sample Field Filtered (must be 0.45 micron)?: Yes No

Spring Flow Rate: gpm

Sample Date (mm/dd/yy): 8/20/2019 Sample Collection Time: 9:41

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

Were any holding times exceeded?: Yes No If yes, please explain in comments field.

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3052795001 Final Lab Analysis CompletionDate: 8/28/2019

Name/Affiliation of Person who Filled Out Form: Nick R. Rogers

Comments: _____

I.D. No 101389

Monitoring Point No. FFMP017W

Sample Date 8/20/2019

FORM 19
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES
ANALYTES

1-Q. Inorganics (Enter all data in mg/l except as noted)

ANALYTE	VALUE ^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.609	D6919-09
BICARBONATE ALKALINITY	46	SM20-2320B
CALCIUM, TOTAL	99.1	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	15	EPA 410.4
CHLORIDE	405	EPA 300
FLUORIDE	0.5 ND	EPA 300
IRON, TOTAL (ug/l)	99	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	41.2	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	490	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	2	EPA 300
pH-FIELD (SU)	5.81	FIELD
pH-LAB (SU)	6.34	SM20-4500HB
POTASSIUM, TOTAL	6.2	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	86.4	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	1567	FIELD
SPEC. COND., LAB (umhos/cm)	1520	SW846 9050A
SULFATE	56.8	EPA 300
ALKALINITY	46	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	1140	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	2.5	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	4.64	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

T Please indicate detection limit if analyte is not detected.

** Total and dissolved analysis required only in conjunction with additional annual metals sampling (see page 4).
Remaining quarterly samples only require total metals analysis.

I.D. No 101389

Monitoring Point No. FFMP017W

Sample Date 8/20/2019

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****2-Q. Organics (Enter all data in ug/l)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
CIS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
TRANS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

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FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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General Reference: Section 273.284
Federal Regulations, Subtitle D: 258.54 and Appendix I to Part 258.

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Frey Farm Landfill

Facility ID (as issued by DEP): 101389

SECTION B. FACILITY INFORMATION

Monitoring Wells must be designed and constructed in accordance with Department Standards. INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (D° MM' SS.S")

Monitoring Point Number: FFMP018W Well Spring Stream Other
 Upgradient/Upstream Downgradient/Downstream

Location (County): Lancaster County

Municipality: Manor Township

Sampling Point: Latitude: 39 ° 57 ' 11.62 " Longitude: 76 ° 27 ' 5.68 "

Depth to Water Level: 26.73 ft Measured from: Land Surface TOC

Casing Stickup: 2.46 ft Elevation of Water Level: 445.47 ft./MSL

Sampling Depth: 40 ft Volume of Water Column: 16.12 gal

Total Well Depth: 51.43 ft Sampling Method: Pumped Bailed Grab

Well Purged: Yes No Well Volumes Purged: 0.9

Sample Field Filtered (must be 0.45 micron)?: Yes No

Spring Flow Rate: gpm

Sample Date (mm/dd/yy): 8/20/2019 Sample Collection Time: 10:26

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

Were any holding times exceeded?: Yes No If yes, please explain in comments field.

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3052795002 Final Lab Analysis CompletionDate: 8/28/2019

Name/Affiliation of Person who Filled Out Form: Nick R. Rogers

Comments: _____

I.D. No 101389

Monitoring Point No. FFMP018W

Sample Date 8/20/2019

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****ANALYTES****1-Q. Inorganics (Enter all data in mg/l except as noted)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.161	D6919-09
BICARBONATE ALKALINITY	18	SM20-2320B
CALCIUM, TOTAL	30.5	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	106	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	67 ND	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	15.7	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	360	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	5.7	EPA 300
pH-FIELD (SU)	5.14	FIELD
pH-LAB (SU)	5.93	SM20-4500HB
POTASSIUM, TOTAL	5	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	35.5	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	554	FIELD
SPEC. COND., LAB (umhos/cm)	528	SW846 9050A
SULFATE	39.4	EPA 300
ALKALINITY	18	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	363	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	0.92	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.15	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

T Please indicate detection limit if analyte is not detected.

** Total and dissolved analysis required only in conjunction with additional annual metals sampling (see page 4).

Remaining quarterly samples only require total metals analysis.

I.D. No 101389

Monitoring Point No. FFMP018W

Sample Date 8/20/2019

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****2-Q. Organics (Enter all data in ug/l)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
CIS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
TRANS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

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MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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Federal Regulations, Subtitle D: 258.54 and Appendix I to Part 258.

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Frey Farm Landfill

Facility ID (as issued by DEP): 101389

SECTION B. FACILITY INFORMATION

Monitoring Wells must be designed and constructed in accordance with Department Standards. INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (D° MM' SS.S")

Monitoring Point Number: FFMP019W Well Spring Stream Other
 Upgradient/Upstream Downgradient/Downstream

Location (County): Lancaster County

Municipality: Manor Township

Sampling Point: Latitude: 39 ° 57 ' 11.58 " Longitude: 76 ° 27 ' 5.75 "

Depth to Water Level: 27.48 ft Measured from: Land Surface TOC

Casing Stickup: 1.79 ft Elevation of Water Level: 444.47 ft./MSL

Sampling Depth: 49 ft Volume of Water Column: 68.74 gal

Total Well Depth: 132.79 ft Sampling Method: Pumped Bailed Grab

Well Purged: Yes No Well Volumes Purged: 1.0

Sample Field Filtered (must be 0.45 micron)?: Yes No

Spring Flow Rate: gpm

Sample Date (mm/dd/yy): 8/20/2019 Sample Collection Time: 11:11

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

Were any holding times exceeded?: Yes No If yes, please explain in comments field.

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3052795003 Final Lab Analysis CompletionDate: 8/28/2019

Name/Affiliation of Person who Filled Out Form: Nick R. Rogers

Comments: _____

I.D. No 101389

Monitoring Point No. FFMP019W

Sample Date 8/20/2019

FORM 19
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES
ANALYTES

1-Q. Inorganics (Enter all data in mg/l except as noted)

ANALYTE	VALUE ^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.141	D6919-09
BICARBONATE ALKALINITY	69	SM20-2320B
CALCIUM, TOTAL	56.6	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	75.9	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	67 ND	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	5.4	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	5.6 ND	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	0.22	EPA 300
pH-FIELD (SU)	5.73	FIELD
pH-LAB (SU)	7.03	SM20-4500HB
POTASSIUM, TOTAL	0.93	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	10.1	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	447	FIELD
SPEC. COND., LAB (umhos/cm)	421	SW846 9050A
SULFATE	14	EPA 300
ALKALINITY	69	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	308	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	1.1	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.29	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

T Please indicate detection limit if analyte is not detected.

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I.D. No 101389

Monitoring Point No. FFMP019W

Sample Date 8/20/2019

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****2-Q. Organics (Enter all data in ug/l)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
CIS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
TRANS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

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Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Frey Farm Landfill

Facility ID (as issued by DEP): 101389

SECTION B. FACILITY INFORMATION

Monitoring Wells must be designed and constructed in accordance with Department Standards. INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (D^o MM' SS.S")

Monitoring Point Number: FFMP029W Well Spring Stream Other
 Upgradient/Upstream Downgradient/Downstream

Location (County): Lancaster County

Municipality: Manor Township

Sampling Point: Latitude: 39 ° 57 ' 12.93 " Longitude: 76 ° 27 ' 0.67 "

Depth to Water Level: 38.41 ft Measured from: Land Surface TOC

Casing Stickup: 2.00 ft Elevation of Water Level: 438.89 ft./MSL

Sampling Depth: 55 ft Volume of Water Column: 29.51 gal

Total Well Depth: 58.5 ft Sampling Method: Pumped Bailed Grab

Well Purged: Yes No Well Volumes Purged: 3.1

Sample Field Filtered (must be 0.45 micron)?: Yes No

Spring Flow Rate: gpm

Sample Date (mm/dd/yy): 8/20/2019 Sample Collection Time: 12:34

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

Were any holding times exceeded?: Yes No If yes, please explain in comments field.

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3052795004 Final Lab Analysis Completion Date: 8/28/2019

Name/Affiliation of Person who Filled Out Form: Nick R. Rogers

Comments: _____

I.D. No 101389

Monitoring Point No. FFMP029W

Sample Date 8/20/2019

FORM 19
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES
ANALYTES

1-Q. Inorganics (Enter all data in mg/l except as noted)

ANALYTE	VALUE ^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.171	D6919-09
BICARBONATE ALKALINITY	13	SM20-2320B
CALCIUM, TOTAL	11.2	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	50.7	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	67 ND	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	8.6	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	25	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	3.6	EPA 300
pH-FIELD (SU)	3.94	FIELD
pH-LAB (SU)	5.89	SM20-4500HB
POTASSIUM, TOTAL	1.8	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	17	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	261	FIELD
SPEC. COND., LAB (umhos/cm)	221	SW846 9050A
SULFATE	4.1	EPA 300
ALKALINITY	13	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	193	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	0.5 ND	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.14	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

T Please indicate detection limit if analyte is not detected.

** Total and dissolved analysis required only in conjunction with additional annual metals sampling (see page 4).
Remaining quarterly samples only require total metals analysis.

I.D. No 101389

Monitoring Point No. FFMP029W

Sample Date 8/20/2019

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****2-Q. Organics (Enter all data in ug/l)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
CIS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
TRANS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised
10/11/2019

DEP USE ONLY

Date Received

FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

This form must be fully and accurately completed. All required information must be typed or legibly printed in the spaces provided. If additional space is necessary, identify each attached sheet as Form 19, reference the item number and identify the date prepared. The "date prepared/revised" on any attached sheets needs to match the "date prepared/revised" on this page.

General Reference: Section 273.284
Federal Regulations, Subtitle D: 258.54 and Appendix I to Part 258.

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Frey Farm Landfill

Facility ID (as issued by DEP): 101389

SECTION B. FACILITY INFORMATION

Monitoring Wells must be designed and constructed in accordance with Department Standards. INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (D^o MM' SS.S")

Monitoring Point Number: FFMP005W Well Spring Stream Other
 Upgradient/Upstream Downgradient/Downstream

Location (County): Lancaster County

Municipality: Manor Township

Sampling Point: Latitude: 39 ° 57 ' 10.67 " Longitude: 76 ° 27 ' 21.3 "

Depth to Water Level: 68.45 ft Measured from: Land Surface TOC

Casing Stickup: 1.70 ft Elevation of Water Level: 468.95 ft./MSL

Sampling Depth: 135 ft Volume of Water Column: 119.77 gal

Total Well Depth: 150 ft Sampling Method: Pumped Bailed Grab

Well Purged: Yes No Well Volumes Purged: 1.4

Sample Field Filtered (must be 0.45 micron)?: Yes No

Spring Flow Rate: gpm

Sample Date (mm/dd/yy): 8/20/2019 Sample Collection Time: 14:25

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

Were any holding times exceeded?: Yes No If yes, please explain in comments field.

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3052795005 Final Lab Analysis CompletionDate: 8/29/2019

Name/Affiliation of Person who Filled Out Form: Nick R. Rogers

Comments: _____

I.D. No 101389

Monitoring Point No. FFMP005W

Sample Date 8/20/2019

FORM 19
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

1-Q. Inorganics (Enter all data in mg/l except as noted)

ANALYTE	VALUE ^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.133	D6919-09
BICARBONATE ALKALINITY	52	SM20-2320B
CALCIUM, TOTAL	72.2	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	188	EPA 300
FLUORIDE	0.5 ND	EPA 300
IRON, TOTAL (ug/l)	67 ND	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	16.6	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	80	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	2.2	EPA 300
pH-FIELD (SU)	5.14	FIELD
pH-LAB (SU)	6.07	SM20-4500HB
POTASSIUM, TOTAL	2.8	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	42.1	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	914	FIELD
SPEC. COND., LAB (umhos/cm)	888	SW846 9050A
SULFATE	59.2	EPA 300
ALKALINITY	52	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	592	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	1.3	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.12	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

T Please indicate detection limit if analyte is not detected.

** Total and dissolved analysis required only in conjunction with additional annual metals sampling (see page 4).
Remaining quarterly samples only require total metals analysis.

I.D. No 101389

Monitoring Point No. FFMP005W

Sample Date 8/20/2019

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****2-Q. Organics (Enter all data in ug/l)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
CIS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
TRANS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised
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FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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General Reference: Section 273.284
Federal Regulations, Subtitle D: 258.54 and Appendix I to Part 258.

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Frey Farm Landfill

Facility ID (as issued by DEP): 101389

SECTION B. FACILITY INFORMATION

Monitoring Wells must be designed and constructed in accordance with Department Standards. INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (D° MM' SS.S")

Monitoring Point Number: FFMP028W Well Spring Stream Other
 Upgradient/Upstream Downgradient/Downstream

Location (County): Lancaster County

Municipality: Manor Township

Sampling Point: Latitude: 37 ° 57 ' 21.62 " Longitude: 76 ° 27 ' 0.1 "

Depth to Water Level: 16.01 ft Measured from: Land Surface TOC

Casing Stickup: 2.50 ft Elevation of Water Level: 448.99 ft./MSL

Sampling Depth: 50 ft Volume of Water Column: _____ gal

Total Well Depth: 60 ft Sampling Method: Pumped Bailed Grab

Well Purged: Yes No Well Volumes Purged: 2.5

Sample Field Filtered (must be 0.45 micron)?: Yes No

Spring Flow Rate: _____ gpm

Sample Date (mm/dd/yy): 8/21/2019 Sample Collection Time: 9:57

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

Were any holding times exceeded?: Yes No If yes, please explain in comments field.

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3053286001 Final Lab Analysis CompletionDate: 8/30/2019

Name/Affiliation of Person who Filled Out Form: Nick R. Rogers

Comments: _____

I.D. No 101389

Monitoring Point No. FFMP028W

Sample Date 8/21/2019

FORM 19
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES
ANALYTES

1-Q. Inorganics (Enter all data in mg/l except as noted)

ANALYTE	VALUE ^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	D6919-09
BICARBONATE ALKALINITY	33	SM20-2320B
CALCIUM, TOTAL	41.1	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	88.8	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	67 ND	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	17.4	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	8.8	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	17.7	EPA 300
pH-FIELD (SU)	5.53	FIELD
pH-LAB (SU)	6.85	SM20-4500HB
POTASSIUM, TOTAL	2.2	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	26.4	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	566	FIELD
SPEC. COND., LAB (umhos/cm)	572	SW846 9050A
SULFATE	24.5	EPA 300
ALKALINITY	33	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	386	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	0.98	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.17	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

T Please indicate detection limit if analyte is not detected.

** Total and dissolved analysis required only in conjunction with additional annual metals sampling (see page 4).
Remaining quarterly samples only require total metals analysis.

I.D. No 101389

Monitoring Point No. FFMP028W

Sample Date 8/21/2019

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****2-Q. Organics (Enter all data in ug/l)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
CIS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
TRANS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT



Date Prepared/Revised
10/11/2019

DEP USE ONLY

Date Received

FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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General Reference: Section 273.284
Federal Regulations, Subtitle D: 258.54 and Appendix I to Part 258.

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Frey Farm Landfill

Facility ID (as issued by DEP): 101389

SECTION B. FACILITY INFORMATION

Monitoring Wells must be designed and constructed in accordance with Department Standards. INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (D° MM' SS.S")

Monitoring Point Number: FFMP025W Well Spring Stream Other
 Upgradient/Upstream Downgradient/Downstream

Location (County): Lancaster County

Municipality: Manor Township

Sampling Point: Latitude: 39 ° 57 ' 19.07 " Longitude: 76 ° 27 ' 1.12 "

Depth to Water Level: 26.83 ft Measured from: Land Surface TOC

Casing Stickup: 1.50 ft Elevation of Water Level: 449.97 ft./MSL

Sampling Depth: 39 ft Volume of Water Column: 19.34 gal

Total Well Depth: 40 ft Sampling Method: Pumped Bailed Grab

Well Purged: Yes No Well Volumes Purged: 1.0

Sample Field Filtered (must be 0.45 micron)?: Yes No

Spring Flow Rate: gpm

Sample Date (mm/dd/yy): 8/21/2019 Sample Collection Time: 10:36

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

Were any holding times exceeded?: Yes No If yes, please explain in comments field.

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3053286002 Final Lab Analysis CompletionDate: 8/29/2019

Name/Affiliation of Person who Filled Out Form: Nick R. Rogers

Comments: _____

I.D. No 101389

Monitoring Point No. FFMP025W

Sample Date 8/21/2019

FORM 19
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES
ANALYTES

1-Q. Inorganics (Enter all data in mg/l except as noted)

ANALYTE	VALUE ^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.137	D6919-09
BICARBONATE ALKALINITY	40	SM20-2320B
CALCIUM, TOTAL	27.4	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	56.8	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	67 ND	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	13	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	6.3	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	11.5	EPA 300
pH-FIELD (SU)	5.22	FIELD
pH-LAB (SU)	7.07	SM20-4500HB
POTASSIUM, TOTAL	2.2	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	21.7	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	416	FIELD
SPEC. COND., LAB (umhos/cm)	402	SW846 9050A
SULFATE	23.1	EPA 300
ALKALINITY	40	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	528	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	1.1	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.5	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

T Please indicate detection limit if analyte is not detected.

** Total and dissolved analysis required only in conjunction with additional annual metals sampling (see page 4).

Remaining quarterly samples only require total metals analysis.

I.D. No 101389

Monitoring Point No. FFMP025W

Sample Date 8/21/2019

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****2-Q. Organics (Enter all data in ug/l)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
CIS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
TRANS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

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FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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General Reference: Section 273.284
Federal Regulations, Subtitle D: 258.54 and Appendix I to Part 258.

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Frey Farm Landfill

Facility ID (as issued by DEP): 101389

SECTION B. FACILITY INFORMATION

Monitoring Wells must be designed and constructed in accordance with Department Standards. INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (D° MM' SS.S")

Monitoring Point Number: FFMP02SW Well Spring Stream Other
 Upgradient/Upstream Downgradient/Downstream

Location (County): Lancaster County Municipality: MANOR TOWNSHIP

Sampling Point: Latitude: 39 ° 57 ' 27.9 " Longitude: 76 ° 27 ' 1.58 "

Depth to Water Level: 15.39 ft Measured from: Land Surface TOC

Casing Stickup: _____ ft Elevation of Water Level: 494.51 ft./MSL

Sampling Depth: 18 ft Volume of Water Column: _____ gal

Total Well Depth: 25 ft Sampling Method: Pumped Bailed Grab

Well Purged: Yes No Well Volumes Purged: 1.2

Sample Field Filtered (must be 0.45 micron)?: Yes No

Spring Flow Rate: _____ gpm

Sample Date (mm/dd/yy): 8/21/2019 Sample Collection Time: 13:14

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

Were any holding times exceeded?: Yes No If yes, please explain in comments field.

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3053286004 Final Lab Analysis Completion Date: 8/29/2019

Name/Affiliation of Person who Filled Out Form: Nick R. Rogers

Comments: _____

I.D. No 101389

Monitoring Point No. FFMP02SW

Sample Date 8/21/2019

FORM 19
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES
ANALYTES

1-Q. Inorganics (Enter all data in mg/l except as noted)

ANALYTE	VALUE ^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.139	D6919-09
BICARBONATE ALKALINITY	14	SM20-2320B
CALCIUM, TOTAL	22.9	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	130	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	9600	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	9.6	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	110	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	14.4	EPA 300
pH-FIELD (SU)	5.23	FIELD
pH-LAB (SU)	6.72	SM20-4500HB
POTASSIUM, TOTAL	5.3	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	79.6	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	702	FIELD
SPEC. COND., LAB (umhos/cm)	644	SW846 9050A
SULFATE	31.7	EPA 300
ALKALINITY	14	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	207	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	1.6	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	126	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

T Please indicate detection limit if analyte is not detected.

** Total and dissolved analysis required only in conjunction with additional annual metals sampling (see page 4).
Remaining quarterly samples only require total metals analysis.

I.D. No 101389

Monitoring Point No. FFMP02SW

Sample Date 8/21/2019

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****2-Q. Organics (Enter all data in ug/l)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
CIS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
TRANS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised 10/11/2019
DEP USE ONLY
Date Received

FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

This form must be fully and accurately completed. All required information must be typed or legibly printed in the spaces provided. If additional space is necessary, identify each attached sheet as Form 19, reference the item number and identify the date prepared. The "date prepared/revised" on any attached sheets needs to match the "date prepared/revised" on this page.

General Reference: Section 273.284
Federal Regulations, Subtitle D: 258.54 and Appendix I to Part 258.

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana
Site Name: Frey Farm Landfill
Facility ID (as issued by DEP): 101389

SECTION B. FACILITY INFORMATION

Monitoring Wells must be designed and constructed in accordance with Department Standards. INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (D° MM' SS.S")

Monitoring Point Number: FFMP02DW Well Spring Stream Other
 Upgradient/Upstream Downgradient/Downstream

Location (County): Lancaster County Municipality: MANOR TOWNSHIP

Sampling Point: Latitude: 39 ° 57 ' 27.74 " Longitude: 76 ° 27 ' 1.49 "

Depth to Water Level: 19.57 ft Measured from: Land Surface TOC

Casing Stickup: _____ ft Elevation of Water Level: 490.03 ft./MSL

Sampling Depth: 120 ft Volume of Water Column: _____ gal

Total Well Depth: 152 ft Sampling Method: Pumped Bailed Grab

Well Purged: Yes No Well Volumes Purged: 0.3

Sample Field Filtered (must be 0.45 micron)?: Yes No

Spring Flow Rate: _____ gpm

Sample Date (mm/dd/yy): 8/21/2019 Sample Collection Time: 14:28

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

Were any holding times exceeded?: Yes No If yes, please explain in comments field.

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3053286005 Final Lab Analysis CompletionDate: 8/29/2019

Name/Affiliation of Person who Filled Out Form: Nick R. Rogers

Comments: _____

I.D. No 101389

Monitoring Point No. FFMP02DW

Sample Date 8/21/2019

FORM 19
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES
ANALYTES

1-Q. Inorganics (Enter all data in mg/l except as noted)

ANALYTE	VALUE ^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.627	D6919-09
BICARBONATE ALKALINITY	125	SM20-2320B
CALCIUM, TOTAL	104	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	275	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	520	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	16.1	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	430	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	8.9	EPA 300
pH-FIELD (SU)	7.03	FIELD
pH-LAB (SU)	7.85	SM20-4500HB
POTASSIUM, TOTAL	1.7	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	99.1	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	1250	FIELD
SPEC. COND., LAB (umhos/cm)	1250	SW846 9050A
SULFATE	29.1	EPA 300
ALKALINITY	125	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	805	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	0.65	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	5.15	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

T Please indicate detection limit if analyte is not detected.

** Total and dissolved analysis required only in conjunction with additional annual metals sampling (see page 4).
Remaining quarterly samples only require total metals analysis.

I.D. No 101389

Monitoring Point No. FFMP02DW

Sample Date 8/21/2019

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****2-Q. Organics (Enter all data in ug/l)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
CIS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
TRANS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised
10/11/2019

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MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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General Reference: Section 273.284
Federal Regulations, Subtitle D: 258.54 and Appendix I to Part 258.

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Frey Farm Landfill

Facility ID (as issued by DEP): 101389

SECTION B. FACILITY INFORMATION

Monitoring Wells must be designed and constructed in accordance with Department Standards. INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (D° MM' SS.S")

Monitoring Point Number: FFMP031W Well Spring Stream Other
 Upgradient/Upstream Downgradient/Downstream

Location (County): Lancaster County Municipality: MANOR TOWNSHIP

Sampling Point: Latitude: 39 ° 57 ' 31.2 " Longitude: 76 ° 27 ' 23.53 "

Depth to Water Level: 64.82 ft Measured from: Land Surface TOC

Casing Stickup: 2.38 ft Elevation of Water Level: 547.84 ft./MSL

Sampling Depth: 130 ft Volume of Water Column: 110.41 gal

Total Well Depth: 140 ft Sampling Method: Pumped Bailed Grab

Well Purged: Yes No Well Volumes Purged: 1.0

Sample Field Filtered (must be 0.45 micron)?: Yes No

Spring Flow Rate: gpm

Sample Date (mm/dd/yy): 8/22/2019 Sample Collection Time: 12:20

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

Were any holding times exceeded?: Yes No If yes, please explain in comments field.

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3053612001 Final Lab Analysis Completion Date: 8/30/2019

Name/Affiliation of Person who Filled Out Form: Nick R. Rogers

Comments: _____

I.D. No 101389

Monitoring Point No. FFMP031W

Sample Date 8/22/2019

FORM 19
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES
ANALYTES

1-Q. Inorganics (Enter all data in mg/l except as noted)

ANALYTE	VALUE ^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.272	D6919-09
BICARBONATE ALKALINITY	68	SM20-2320B
CALCIUM, TOTAL	40.6	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	24.6	EPA 300
FLUORIDE	0.2	EPA 300
IRON, TOTAL (ug/l)	3800	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	3.9	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	360	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	0.2 ND	EPA 300
pH-FIELD (SU)	8	FIELD
pH-LAB (SU)	7.66	SM20-4500HB
POTASSIUM, TOTAL	1.4	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	10.7	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	322	FIELD
SPEC. COND., LAB (umhos/cm)	274	SW846 9050A
SULFATE	42.9	EPA 300
ALKALINITY	68	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	142	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	0.57	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	24.8	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

T Please indicate detection limit if analyte is not detected.

** Total and dissolved analysis required only in conjunction with additional annual metals sampling (see page 4).
Remaining quarterly samples only require total metals analysis.

I.D. No 101389

Monitoring Point No. FFMP031W

Sample Date 8/22/2019

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****2-Q. Organics (Enter all data in ug/l)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
CIS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
TRANS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

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FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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General Reference: Section 273.284
Federal Regulations, Subtitle D: 258.54 and Appendix I to Part 258.

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Frey Farm Landfill

Facility ID (as issued by DEP): 101389

SECTION B. FACILITY INFORMATION

Monitoring Wells must be designed and constructed in accordance with Department Standards. INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (D° MM' SS.S")

Monitoring Point Number: FFMP002W Well Spring Stream Other
 Upgradient/Upstream Downgradient/Downstream

Location (County): Lancaster County Municipality: Manor Township

Sampling Point: Latitude: 39 ° 57 ' 32.25 " Longitude: 76 ° 27 ' 24.03 "

Depth to Water Level: 65.51 ft Measured from: Land Surface TOC

Casing Stickup: 1.60 ft Elevation of Water Level: 547.69 ft./MSL

Sampling Depth: 85 ft Volume of Water Column: 152.87 gal

Total Well Depth: 169.6 ft Sampling Method: Pumped Bailed Grab

Well Purged: Yes No Well Volumes Purged: 1.1

Sample Field Filtered (must be 0.45 micron)?: Yes No

Spring Flow Rate: gpm

Sample Date (mm/dd/yy): 8/22/2019 Sample Collection Time: 13:07

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

Were any holding times exceeded?: Yes No If yes, please explain in comments field.

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3053612002 Final Lab Analysis CompletionDate: 8/30/2019

Name/Affiliation of Person who Filled Out Form: Nick R. Rogers

Comments: _____

I.D. No 101389

Monitoring Point No. FFMP002W

Sample Date 8/22/2019

FORM 19
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES
ANALYTES

1-Q. Inorganics (Enter all data in mg/l except as noted)

ANALYTE	VALUE ^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1	D6919-09
BICARBONATE ALKALINITY	5 ND	SM20-2320B
CALCIUM, TOTAL	20.2	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	22.1	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	67 ND	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	7.7	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	260	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	22.5	EPA 300
pH-FIELD (SU)	4.82	FIELD
pH-LAB (SU)	5.57	SM20-4500HB
POTASSIUM, TOTAL	1	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	13.7	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	5	FIELD
SPEC. COND., LAB (umhos/cm)	257	SW846 9050A
SULFATE	12.8	EPA 300
ALKALINITY	5 ND	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	189	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	0.66	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.27	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

T Please indicate detection limit if analyte is not detected.

** Total and dissolved analysis required only in conjunction with additional annual metals sampling (see page 4).

Remaining quarterly samples only require total metals analysis.

I.D. No 101389

Monitoring Point No. FFMP002W

Sample Date 8/22/2019

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****2-Q. Organics (Enter all data in ug/l)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
CIS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
TRANS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised
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MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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General Reference: Section 273.284
Federal Regulations, Subtitle D: 258.54 and Appendix I to Part 258.

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Frey Farm Landfill

Facility ID (as issued by DEP): 101389

SECTION B. FACILITY INFORMATION

Monitoring Wells must be designed and constructed in accordance with Department Standards. INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (D° MM' SS.S")

Monitoring Point Number: FFMP032W Well Spring Stream Other
 Upgradient/Upstream Downgradient/Downstream

Location (County): Lancaster County Municipality: MANOR TOWNSHIP

Sampling Point: Latitude: 39 ° 57 ' 33.45 " Longitude: 76 ° 27 ' 17.71 "

Depth to Water Level: 47.27 ft Measured from: Land Surface TOC

Casing Stickup: 2.06 ft Elevation of Water Level: 546.82 ft./MSL

Sampling Depth: 62 ft Volume of Water Column: 40.73 gal

Total Well Depth: 75 ft Sampling Method: Pumped Bailed Grab

Well Purged: Yes No Well Volumes Purged: 1.0

Sample Field Filtered (must be 0.45 micron)?: Yes No

Spring Flow Rate: gpm

Sample Date (mm/dd/yy): 8/22/2019 Sample Collection Time: 13:47

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

Were any holding times exceeded?: Yes No If yes, please explain in comments field.

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3053612003 Final Lab Analysis CompletionDate: 8/30/2019

Name/Affiliation of Person who Filled Out Form: Nick R. Rogers

Comments: _____

I.D. No 101389

Monitoring Point No. FFMP032W

Sample Date 8/22/2019

FORM 19
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES
ANALYTES

1-Q. Inorganics (Enter all data in mg/l except as noted)

ANALYTE	VALUE ^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.572	D6919-09
BICARBONATE ALKALINITY	67	SM20-2320B
CALCIUM, TOTAL	15.4	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	21.9	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	5800	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	4.9	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	630	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	0.2 ND	EPA 300
pH-FIELD (SU)	6.6	FIELD
pH-LAB (SU)	7.33	SM20-4500HB
POTASSIUM, TOTAL	1.2	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	13.2	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	213	FIELD
SPEC. COND., LAB (umhos/cm)	172	SW846 9050A
SULFATE	2 ND	EPA 300
ALKALINITY	67	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	76	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	0.85	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	95.5	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

T Please indicate detection limit if analyte is not detected.

** Total and dissolved analysis required only in conjunction with additional annual metals sampling (see page 4).
Remaining quarterly samples only require total metals analysis.

I.D. No 101389

Monitoring Point No. FFMP032W

Sample Date 8/22/2019

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****2-Q. Organics (Enter all data in ug/l)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
CIS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
TRANS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

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Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Frey Farm Landfill

Facility ID (as issued by DEP): 101389

SECTION B. FACILITY INFORMATION

Monitoring Wells must be designed and constructed in accordance with Department Standards. INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (D° MM' SS.S")

Monitoring Point Number: FFMP033W Well Spring Stream Other
 Upgradient/Upstream Downgradient/Downstream

Location (County): Lancaster County

Municipality: MANOR TOWNSHIP

Sampling Point: Latitude: 39 ° 57 ' 31.09 " Longitude: 76 ° 27 ' 4.98 "

Depth to Water Level: 17 ft Measured from: Land Surface TOC

Casing Stickup: 0.49 ft Elevation of Water Level: 499.52 ft./MSL

Sampling Depth: _____ ft Volume of Water Column: 116.02 gal

Total Well Depth: 96 ft Sampling Method: Pumped Bailed Grab

Well Purged: Yes No Well Volumes Purged: 1.0

Sample Field Filtered (must be 0.45 micron)?: Yes No

Spring Flow Rate: _____ gpm

Sample Date (mm/dd/yy): 8/22/2019 Sample Collection Time: 15:02

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

Were any holding times exceeded?: Yes No If yes, please explain in comments field.

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3053612004 Final Lab Analysis CompletionDate: 8/30/2019

Name/Affiliation of Person who Filled Out Form: Nick R. Rogers

Comments: _____

I.D. No 101389

Monitoring Point No. FFMP033W

Sample Date 8/22/2019

FORM 19
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES
ANALYTES

1-Q. Inorganics (Enter all data in mg/l except as noted)

ANALYTE	VALUE ^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.694	D6919-09
BICARBONATE ALKALINITY	43	SM20-2320B
CALCIUM, TOTAL	26.6	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	41	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	4500	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	8.9	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	480	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	12	EPA 300
pH-FIELD (SU)	4.28	FIELD
pH-LAB (SU)	6.41	SM20-4500HB
POTASSIUM, TOTAL	1.5	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	13.6	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	349	FIELD
SPEC. COND., LAB (umhos/cm)	298	SW846 9050A
SULFATE	8.1	EPA 300
ALKALINITY	43	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	213	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	0.6	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	3.13	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

T Please indicate detection limit if analyte is not detected.

** Total and dissolved analysis required only in conjunction with additional annual metals sampling (see page 4).
Remaining quarterly samples only require total metals analysis.

I.D. No 101389

Monitoring Point No. FFMP033W

Sample Date 8/22/2019

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****2-Q. Organics (Enter all data in ug/l)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
CIS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
TRANS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised
10/11/2019

DEP USE ONLY

Date Received

FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

This form must be fully and accurately completed. All required information must be typed or legibly printed in the spaces provided. If additional space is necessary, identify each attached sheet as Form 19, reference the item number and identify the date prepared. The "date prepared/revised" on any attached sheets needs to match the "date prepared/revised" on this page.

General Reference: Section 273.284
Federal Regulations, Subtitle D: 258.54 and Appendix I to Part 258.

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Frey Farm Landfill

Facility ID (as issued by DEP): 101389

SECTION B. FACILITY INFORMATION

Monitoring Wells must be designed and constructed in accordance with Department Standards. INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (D° MM' SS.S")

Monitoring Point Number: FFMP26RW Well Spring Stream Other
 Upgradient/Upstream Downgradient/Downstream

Location (County): Lancaster County

Municipality: Manor Township

Sampling Point: Latitude: 39 ° 57 ' 11.03 " Longitude: 76 ° 27 ' 20.3 "

Depth to Water Level: 78.81 ft Measured from: Land Surface TOC

Casing Stickup: 3.30 ft Elevation of Water Level: 468.59 ft./MSL

Sampling Depth: 105 ft Volume of Water Column: 51.68 gal

Total Well Depth: 114 ft Sampling Method: Pumped Bailed Grab

Well Purged: Yes No Well Volumes Purged: 2.6

Sample Field Filtered (must be 0.45 micron)?: Yes No

Spring Flow Rate: gpm

Sample Date (mm/dd/yy): 8/23/2019 Sample Collection Time: 9:21

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

Were any holding times exceeded?: Yes No If yes, please explain in comments field.

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3053834001 Final Lab Analysis CompletionDate: 8/31/2019

Name/Affiliation of Person who Filled Out Form: Nick R. Rogers

Comments: _____

I.D. No 101389

Monitoring Point No. FFMP26RW

Sample Date 8/23/2019

FORM 19
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES
ANALYTES

1-Q. Inorganics (Enter all data in mg/l except as noted)

ANALYTE	VALUE ^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	D6919-09
BICARBONATE ALKALINITY	46	SM20-2320B
CALCIUM, TOTAL	67.8	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	191	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	67 ND	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	19.1	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	510	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	2.3	EPA 300
pH-FIELD (SU)	5.61	FIELD
pH-LAB (SU)	6	SM20-4500HB
POTASSIUM, TOTAL	8	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	60	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	945	FIELD
SPEC. COND., LAB (umhos/cm)	912	SW846 9050A
SULFATE	74.5	EPA 300
ALKALINITY	46	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	622	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	1.6	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.44	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

T Please indicate detection limit if analyte is not detected.

** Total and dissolved analysis required only in conjunction with additional annual metals sampling (see page 4).
Remaining quarterly samples only require total metals analysis.

I.D. No 101389

Monitoring Point No. FFMP26RW

Sample Date 8/23/2019

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****2-Q. Organics (Enter all data in ug/l)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
CIS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
TRANS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised
10/11/2019

DEP USE ONLY

Date Received

FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

This form must be fully and accurately completed. All required information must be typed or legibly printed in the spaces provided. If additional space is necessary, identify each attached sheet as Form 19, reference the item number and identify the date prepared. The "date prepared/revised" on any attached sheets needs to match the "date prepared/revised" on this page.

General Reference: Section 273.284
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SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Frey Farm Landfill

Facility ID (as issued by DEP): 101389

SECTION B. FACILITY INFORMATION

Monitoring Wells must be designed and constructed in accordance with Department Standards. INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (D° MM' SS.S")

Monitoring Point Number: FFMP016W Well Spring Stream Other
 Upgradient/Upstream Downgradient/Downstream

Location (County): Lancaster County

Municipality: Manor Township

Sampling Point: Latitude: 39 ° 57 ' 19.15 " Longitude: 76 ° 27 ' 0.88 "

Depth to Water Level: 13.81 ft Measured from: Land Surface TOC

Casing Stickup: 1.97 ft Elevation of Water Level: 460.79 ft./MSL

Sampling Depth: 135 ft Volume of Water Column: 199.72 gal

Total Well Depth: 149.8 ft Sampling Method: Pumped Bailed Grab

Well Purged: Yes No Well Volumes Purged: _____

Sample Field Filtered (must be 0.45 micron)?: Yes No

Spring Flow Rate: _____ gpm

Sample Date (mm/dd/yy): 8/23/2019 Sample Collection Time: 10:05

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

Were any holding times exceeded?: Yes No If yes, please explain in comments field.

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3053834002 Final Lab Analysis CompletionDate: 8/31/2019

Name/Affiliation of Person who Filled Out Form: Nick R. Rogers

Comments: _____

I.D. No 101389

Monitoring Point No. FFMP016W

Sample Date 8/23/2019

FORM 19
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES
ANALYTES

1-Q. Inorganics (Enter all data in mg/l except as noted)

ANALYTE	VALUE ^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	D6919-09
BICARBONATE ALKALINITY	42	SM20-2320B
CALCIUM, TOTAL	29.9	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	83.1	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	67 ND	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	14.2	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	26	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	11.5	EPA 300
pH-FIELD (SU)	6.27	FIELD
pH-LAB (SU)	6.22	SM20-4500HB
POTASSIUM, TOTAL	2.2	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	26.7	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	7	FIELD
SPEC. COND., LAB (umhos/cm)	479	SW846 9050A
SULFATE	27.8	EPA 300
ALKALINITY	42	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	322	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	0.97	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.26	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

T Please indicate detection limit if analyte is not detected.

** Total and dissolved analysis required only in conjunction with additional annual metals sampling (see page 4).
Remaining quarterly samples only require total metals analysis.

I.D. No 101389

Monitoring Point No. FFMP016W

Sample Date 8/23/2019

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****2-Q. Organics (Enter all data in ug/l)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
CIS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
TRANS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

I.D. No 101389

Monitoring Point No. FFMP034W

Sample Date 8/21/2019

FORM 8**1. Inorganics (Enter all data in mg/l except as noted)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.223	ASTM D6919-03
BICARBONATE ALKALINITY	34	SM20 2321
CALCIUM, TOTAL	44.7	EPA 200.7
CALCIUM, DISSOLVED	41.5	EPA 200.7
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	120	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL	490	EPA 200.7
IRON, DISSOLVED	60 ND	EPA 200.7
MAGNESIUM, TOTAL	17.3	EPA 200.7
MAGNESIUM, DISSOLVED	16	EPA 200.7
MANGANESE, TOTAL	66	EPA 200.7
MANGANESE, DISSOLVED	71	EPA 200.7
NITRATE-NITROGEN	9.2	EPA 300
pH-FIELD	4.62	FIELD
pH-LAB	7.03	EPA 150.1
POTASSIUM, TOTAL	2.3	EPA 200.7
POTASSIUM, DISSOLVED	2.4	EPA 200.7
SODIUM, TOTAL	31.6	EPA 200.7
SODIUM, DISSOLVED	31.6	EPA 200.7
SPEC. COND., FIELD	622	FIELD
SPEC. COND., LAB	610	EPA 120.1
SULFATE	29.9	EPA 300
ALKALINITY	34	SM20 2320B
TDS (TOT. DISSOLVED SOLIDS)	423	SM20 2540C
TOC (TOTAL ORGANIC CARBON)	0.81	SM20 5310B
TOTAL PHENOLICS	5 ND	SW846 9066
TURBIDITY	7.83	SM 2130B

T Please indicate detection limit if analyte is not detected.

I.D. No 101389

Monitoring Point No. FFMP034W

Sample Date 8/21/2019

FORM 8**2. Metals (Enter all data in ug/l)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
ARSENIC, TOTAL	9 ND	EPA 200.8
ARSENIC, DISSOLVED	8 ND	EPA 200.8
BARIUM, TOTAL	37	EPA 200.8
BARIUM, DISSOLVED	38	EPA 200.8
CADMIUM, TOTAL	2.2 ND	EPA 200.8
CADMIUM, DISSOLVED	2 ND	EPA 200.8
CHROMIUM, TOTAL	5.6 ND	EPA 200.8
CHROMIUM, DISSOLVED	5 ND	EPA 200.8
COPPER, TOTAL	11 ND	EPA 200.8
COPPER, DISSOLVED	10 ND	EPA 200.8
LEAD-FLAMELESS, TOTAL	6.7 ND	EPA 200.8
LEAD, DISSOLVED	6 ND	EPA 200.8
MERCURY, TOTAL	0.5 ND	EPA 200.8
MERCURY, DISSOLVED	0.5 ND	EPA 200.8
SELENIUM, TOTAL	22 ND	EPA 200.8
SELENIUM, DISSOLVED	20 ND	EPA 200.8
SILVER, TOTAL	4.4 ND	EPA 200.8
SILVER, DISSOLVED	4 ND	EPA 200.8
ZINC, TOTAL	22 ND	EPA 200.8
ZINC, DISSOLVED	20 ND	EPA 200.8

T Please indicate detection limit if analyte is not detected.

I.D. No 101389

Monitoring Point No. FFMP034W

Sample Date 8/21/2019

FORM 8**3. Organics (Enter all data in ug/l)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BENZENE	1 ND	EPA 524.2
BROMOFORM	1 ND	EPA 524.2
CARBON TETRACHLORIDE	1 ND	EPA 524.2
CHLOROENZENE	1 ND	EPA 524.2
CHLOROETHANE	1 ND	EPA 524.2
3-CHLORO-1-PROPENE	1 ND	EPA 524.2
DIBROMOCHLOROMETHANE	1 ND	EPA 524.2
1,2-DIBROMOETHANE	1 ND	EPA 524.2
1,2-DICHLOROENZENE	1 ND	EPA 524.2
1,3-DICHLOROENZENE	1 ND	EPA 524.2
1,4-DICHLOROENZENE	1 ND	EPA 524.2
DICHLORODIFLUOROMETHANE	1 ND	EPA 524.2
1,1-DICHLOROETHANE	1 ND	EPA 524.2
1,1-DICHLOROETHENE	1 ND	EPA 524.2
1,2-DICHLOROETHANE	1 ND	EPA 524.2
CIS 1,2-DICHLOROETHENE	1 ND	EPA 524.2
TRANS 1,2-DICHLOROETHENE	1 ND	EPA 524.2
1,2-DICHLOROPROPANE	1 ND	EPA 524.2
CIS 1,3-DICHLOROPROPENE	1 ND	EPA 524.2
TRANS 1,3-DICHLOROPROPENE	1 ND	EPA 524.2
ETHYLBENZENE	1 ND	EPA 524.2
BROMOMETHANE	1 ND	EPA 524.2
CHLOROMETHANE	1 ND	EPA 524.2
METHYLENE CHLORIDE	1 ND	EPA 524.2
2-BUTANONE (MEK)	10 ND	EPA 524.2
1,1,1,2-TETRACHLOROETHANE	1 ND	EPA 524.2
TETRACHLOROETHENE	1 ND	EPA 524.2
1,1,2,2-TETRACHLOROETHANE	1 ND	EPA 524.2
TOLUENE	1 ND	EPA 524.2
1,1,1-TRICHLOROETHANE	1 ND	EPA 524.2
1,1,2-TRICHLOROETHANE	1 ND	EPA 524.2
TRICHLOROETHENE	1 ND	EPA 524.2
TRICHLOROFLUOROMETHANE	1 ND	EPA 524.2
1,2,3-TRICHLOROPROPANE	2 ND	EPA 524.2
VINYL CHLORIDE	1 ND	EPA 524.2
XYLENES (TOTAL)	3 ND	EPA 524.2
4-METHYL-2-PENTANONE	5 ND	EPA 524.2

T Please indicate detection limit if analyte is not detected.

I.D. No _____ 101389

Monitoring Point No. _____ FFMP034W

Sample Date _____ 8/21/2019

FORM 8
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

SUBTITLE D - Add-On List - For Detection Zone Analytes (mg/l). When the MCLs (where established) of any analyte is exceeded in the detection zone (e.g. established cells) Form 50 monitoring, the following analytes must be monitored during the baseline groundwater analyses .

ORGANICS AND METALS

ANALYTE	VALUE ^T	ANALYSIS METHOD NUMBER
ACETONE		EPA 524.2
ACRYLONITRILE		EPA 524.2
BROMOCHLOROMETHANE (CHLOROBRO		EPA 524.2
BROMODICHLOROMETHANE		EPA 524.2
CARBON DISULFIDE		EPA 524.2
CHLOROFORM		EPA 524.2
1,2-DIBROMO-3-CHLOROPROPANE		EPA 524.2
TRANS 1,4-DICHLORO-2-BUTENE		EPA 524.2
2-HEXANONE		EPA 524.2
DIBROMOMETHANE		EPA 524.2
IODOMETHANE		EPA 524.2
STYRENE		EPA 524.2
VINYL ACETATE		EPA 524.2
ANTIMONY		EPA 200.8
BERYLLIUM		EPA 200.8
COBALT		SW846 6010B
NICKEL		SW846 6010B
THALLIUM		EPA 200.8
VANADIUM		SW846 6010B

^T Please indicate detection limit if analyte is not detected.

I.D. No	101389
Monitoring Point No.	FFMP034W
Sample Date	8/21/2019

FORM 8

Qualitatively Identified Organic Compounds

List at least ten volatile organic compounds not otherwise identified in this section. Their identification should be based upon those compounds showing the greatest apparent concentration from the peaks of a mass spectrum of each sample. These ten compounds shall be identified but the concentration of each is not required.

<u>Constituent</u>	<u>CAS Number</u>

September 1, 2019

Mr. Daniel Brown
Lancaster County Solid Waste Authority
1299 Hbg Pike, P.O. Box 4425
Lancaster, PA 17604

Certificate of Analysis

Project Name:	FREY FARM	Workorder:	3053612
Purchase Order:	PO1000126	Workorder ID:	3rd QTR 2019 GWMP-FORM 19Q

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Thursday, August 22, 2019.

The ALS Environmental laboratory in Middletown, Pennsylvania is a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory and as such, certifies that all applicable test results meet the requirements of NELAP.

If you have any questions regarding this certificate of analysis, please contact Ms. Susan J Scherer (Project Coordinator) at (717) 944-5541.

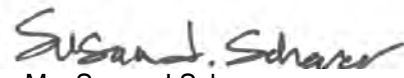
Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications section of the ALS website at www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads.

This laboratory report may not be reproduced, except in full, without the written approval of ALS Environmental.

ALS Spring City: 10 Riverside Drive, Spring City, PA 19475 610-948-4903

CC: Mr. Nicholas Rogers , Ms. Jordan Gallagher , Mr. Jeff Musser

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.



Ms. Susan J Scherer
Project Coordinator

ALS Environmental Laboratory Locations Across North America

Canada: Burlington · Calgary · Centre of Excellence · Edmonton · Fort McMurray · Fort St. John · Grande Prairie · London · Mississauga · Richmond Hill · Saskatoon · Thunder Bay
Vancouver Waterloo · Winnipeg · Yellowknife United States: Cincinnati · Everett · Fort Collins · Holland · Houston · Middletown · Salt Lake City · Spring City · York Mexico: Monterrey

SAMPLE SUMMARY

Workorder: 3053612 3rd QTR 2019 GWMP-FORM 19Q

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
3053612001	FFMP031W	Ground Water	8/22/2019 12:20	8/22/2019 16:51	Mr. Brian G Shade
3053612002	FFMP002W	Ground Water	8/22/2019 13:07	8/22/2019 16:51	Mr. Brian G Shade
3053612003	FFMP032W	Ground Water	8/22/2019 13:47	8/22/2019 16:51	Mr. Brian G Shade
3053612004	FFMP033W	Ground Water	8/22/2019 15:02	8/22/2019 16:51	Mr. Brian G Shade

ALS Environmental Laboratory Locations Across North America

Canada: Burlington · Calgary · Centre of Excellence · Edmonton · Fort McMurray · Fort St. John · Grande Prairie · London · Mississauga · Richmond Hill · Saskatoon · Thunder Bay
Vancouver Waterloo · Winnipeg · Yellowknife **United States:** Cincinnati · Everett · Fort Collins · Holland · Houston · Middletown · Salt Lake City · Spring City · York **Mexico:** Monterrey

SAMPLE SUMMARY

Workorder: 3053612 3rd QTR 2019 GWMP-FORM 19Q

Notes

- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 - Field Services Sampling Plan).
- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
- The Chain of Custody document is included as part of this report.
- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are performed in the laboratory and are therefore analyzed out of hold time.
- Method references listed on this report beginning with the prefix "S" followed by a method number (such as S2310B-97) refer to methods from "Standard Methods for the Examination of Water and Wastewater".
- For microbiological analyses, the "Prepared" value is the date/time into the incubator and the "Analyzed" value is the date/time out the incubator.
- An Analysis-Prep Method Cross Reference Table is included after Analytical Results & Qualifiers section in this report.

Standard Acronyms/Flags

J	Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
U	Indicates that the analyte was Not Detected (ND)
N	Indicates presumptive evidence of the presence of a compound
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RDL	Reporting Detection Limit
ND	Not Detected - indicates that the analyte was Not Detected at the RDL
Cntr	Analysis was performed using this container
RegLmt	Regulatory Limit
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
%Rec	Percent Recovery
RPD	Relative Percent Difference
LOD	DoD Limit of Detection
LOQ	DoD Limit of Quantitation
DL	DoD Detection Limit
I	Indicates reported value is greater than or equal to the Method Detection Limit (MDL) but less than the Report Detection Limit (RDL)
(S)	Surrogate Compound
NC	Not Calculated
*	Result outside of QC limits

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ANALYTICAL RESULTS

Workorder: 3053612 3rd QTR 2019 GWMP-FORM 19Q

Lab ID: **3053612001**

Date Collected: 8/22/2019 12:20

Matrix: Ground Water

Sample ID: **FFMP031W**

Date Received: 8/22/2019 16:51

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			8/29/19 03:37	PDK	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			8/29/19 03:37	PDK	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/29/19 03:37	PDK	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/29/19 03:37	PDK	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/29/19 03:37	PDK	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/29/19 03:37	PDK	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/29/19 03:37	PDK	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			8/29/19 03:37	PDK	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			8/29/19 03:37	PDK	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			8/29/19 03:37	PDK	G
Toluene	ND		ug/L	1.0	SW846 8260B			8/29/19 03:37	PDK	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			8/29/19 03:37	PDK	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			8/29/19 03:37	PDK	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			8/29/19 03:37	PDK	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			8/29/19 03:37	PDK	G
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	126		%	62 - 133	SW846 8260B			8/29/19 03:37	PDK	G
4-Bromofluorobenzene (S)	101		%	79 - 114	SW846 8260B			8/29/19 03:37	PDK	G
Dibromofluoromethane (S)	106		%	78 - 116	SW846 8260B			8/29/19 03:37	PDK	G
Toluene-d8 (S)	110		%	76 - 127	SW846 8260B			8/29/19 03:37	PDK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	68		mg/L	5	SM2320B-2011			8/28/19 07:58	MBW	B
Alkalinity, Total	68	2	mg/L	5	SM2320B-2011			8/28/19 07:58	MBW	B
Ammonia-N	0.272		mg/L	0.100	D6919-09			8/30/19 06:50	AK	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			8/28/19 13:26	AK	A
Chloride	24.6		mg/L	2.0	EPA 300.0			8/23/19 06:02	CHW	B
Fluoride	0.20		mg/L	0.20	EPA 300.0			8/23/19 06:02	CHW	B
Nitrate-N	ND		mg/L	0.20	EPA 300.0			8/23/19 06:02	CHW	B
pH	7.66	1	pH_Units		S4500HB-11			8/28/19 07:58	MBW	B
Phenolics	ND		mg/L	0.005	SW846 9066	8/27/19 13:01	C_D	8/28/19 08:23	C_D	F
Specific Conductance	274		umhos/cm	1	SW846 9050A			8/28/19 07:58	MBW	B
Sulfate	42.9		mg/L	2.0	EPA 300.0			8/23/19 06:02	CHW	B
Total Dissolved Solids	142		mg/L	5	S2540C-11			8/28/19 16:41	D1C	B
Total Organic Carbon (TOC)	0.57		mg/L	0.50	SW846 9060A			8/30/19 10:49	PAG	D
Turbidity	24.8		NTU	0.10	SM2130B-2011			8/23/19 07:16	R2B	B

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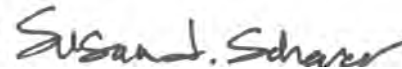
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ANALYTICAL RESULTS

Workorder: 3053612 3rd QTR 2019 GWMP-FORM 19Q

Lab ID: **3053612001** Date Collected: 8/22/2019 12:20 Matrix: Ground Water
Sample ID: **FFMP031W** Date Received: 8/22/2019 16:51

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	40.6		mg/L	0.11	SW846 6010C	8/26/19 18:30	SXC	8/27/19 18:41	SRT	J1
Iron, Total	3.8		mg/L	0.067	SW846 6010C	8/26/19 18:30	SXC	8/27/19 18:41	SRT	J1
Magnesium, Total	3.9		mg/L	0.11	SW846 6010C	8/26/19 18:30	SXC	8/27/19 18:41	SRT	J1
Manganese, Total	0.36		mg/L	0.0056	SW846 6010C	8/26/19 18:30	SXC	8/27/19 18:41	SRT	J1
Potassium, Total	1.4		mg/L	0.56	SW846 6010C	8/26/19 18:30	SXC	8/27/19 18:41	SRT	J1
Sodium, Total	10.7		mg/L	0.56	SW846 6010C	8/26/19 18:30	SXC	8/27/19 18:41	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	64.82		Feet		Field			8/22/19 12:20	BGS	C
Elev Top MW Casing above MSL	612.66		Feet		Field			8/22/19 12:20	BGS	C
Flow Rate	1.32		gal/min		Field			8/22/19 12:20	BGS	C
Ground Water Elevation	547.84		ft/MSL		Field			8/22/19 12:20	BGS	C
pH, Field (SM4500B)	8.00		pH_Units		Field			8/22/19 12:20	BGS	C
Sample Depth	130.00		Feet		Field			8/22/19 12:20	BGS	C
Specific Conductance, Field	322		umhos/cm	1	Field			8/22/19 12:20	BGS	C
Temperature	14.43		Deg. C		Field			8/22/19 12:20	BGS	C
Total Well Depth	142.70		Feet		Field			8/22/19 12:20	BGS	C
Volume in Water Column	114.48		Gallons		Field			8/22/19 12:20	BGS	C
Water Level After Purge	113.14		Feet		Field			8/22/19 12:20	BGS	C
Well Volumes Purged	0.99		Vol		Field			8/22/19 12:20	BGS	C



Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3053612 3rd QTR 2019 GWMP-FORM 19Q

Lab ID: **3053612002**

Date Collected: 8/22/2019 13:07

Matrix: Ground Water

Sample ID: **FFMP002W**

Date Received: 8/22/2019 16:51

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			8/29/19 04:00	PDK	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			8/29/19 04:00	PDK	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/29/19 04:00	PDK	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/29/19 04:00	PDK	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/29/19 04:00	PDK	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/29/19 04:00	PDK	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/29/19 04:00	PDK	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			8/29/19 04:00	PDK	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			8/29/19 04:00	PDK	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			8/29/19 04:00	PDK	G
Toluene	ND		ug/L	1.0	SW846 8260B			8/29/19 04:00	PDK	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			8/29/19 04:00	PDK	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			8/29/19 04:00	PDK	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			8/29/19 04:00	PDK	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			8/29/19 04:00	PDK	G
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	128		%	62 - 133	SW846 8260B			8/29/19 04:00	PDK	G
4-Bromofluorobenzene (S)	102		%	79 - 114	SW846 8260B			8/29/19 04:00	PDK	G
Dibromofluoromethane (S)	104		%	78 - 116	SW846 8260B			8/29/19 04:00	PDK	G
Toluene-d8 (S)	109		%	76 - 127	SW846 8260B			8/29/19 04:00	PDK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	ND		mg/L	5	SM2320B-2011			8/28/19 08:06	MBW	B
Alkalinity, Total	ND	2	mg/L	5	SM2320B-2011			8/28/19 08:06	MBW	B
Ammonia-N	0.100		mg/L	0.100	D6919-09			8/30/19 07:03	AK	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			8/28/19 13:26	AK	A
Chloride	22.1		mg/L	2.0	EPA 300.0			8/23/19 06:17	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			8/23/19 06:17	CHW	B
Nitrate-N	22.5	3	mg/L	0.50	EPA 300.0			8/24/19 18:51	CHW	B
pH	5.57	1	pH_Units		S4500HB-11			8/28/19 08:06	MBW	B
Phenolics	ND		mg/L	0.005	SW846 9066	8/27/19 13:01	C_D	8/28/19 08:23	C_D	F
Specific Conductance	257		umhos/cm	1	SW846 9050A			8/28/19 08:06	MBW	B
Sulfate	12.8		mg/L	2.0	EPA 300.0			8/23/19 06:17	CHW	B
Total Dissolved Solids	189		mg/L	5	S2540C-11			8/28/19 16:41	D1C	B
Total Organic Carbon (TOC)	0.66		mg/L	0.50	SW846 9060A			8/30/19 10:49	PAG	D
Turbidity	0.27		NTU	0.10	SM2130B-2011			8/23/19 07:16	R2B	B

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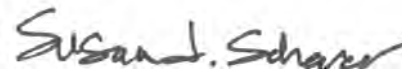
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ANALYTICAL RESULTS

Workorder: 3053612 3rd QTR 2019 GWMP-FORM 19Q

Lab ID: **3053612002** Date Collected: 8/22/2019 13:07 Matrix: Ground Water
Sample ID: **FFMP002W** Date Received: 8/22/2019 16:51

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	20.2		mg/L	0.11	SW846 6010C	8/26/19 18:30	SXC	8/27/19 18:45	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	8/26/19 18:30	SXC	8/27/19 18:45	SRT	J1
Magnesium, Total	7.7		mg/L	0.11	SW846 6010C	8/26/19 18:30	SXC	8/27/19 18:45	SRT	J1
Manganese, Total	0.26		mg/L	0.0056	SW846 6010C	8/26/19 18:30	SXC	8/27/19 18:45	SRT	J1
Potassium, Total	1.0		mg/L	0.56	SW846 6010C	8/26/19 18:30	SXC	8/27/19 18:45	SRT	J1
Sodium, Total	13.7		mg/L	0.56	SW846 6010C	8/26/19 18:30	SXC	8/27/19 18:45	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	65.51		Feet		Field			8/22/19 13:07	BGS	C
Elev Top MW Casing above MSL	613.20		Feet		Field			8/22/19 13:07	BGS	C
Flow Rate	1.29		gal/min		Field			8/22/19 13:07	BGS	C
Ground Water Elevation	547.69		ft/MSL		Field			8/22/19 13:07	BGS	C
pH, Field (SM4500B)	4.82		pH_Units		Field			8/22/19 13:07	BGS	C
Sample Depth	85.00		Feet		Field			8/22/19 13:07	BGS	C
Specific Conductance, Field	5		umhos/cm	1	Field			8/22/19 13:07	BGS	C
Temperature	22.94		Deg. C		Field			8/22/19 13:07	BGS	C
Total Well Depth	90.02		Feet		Field			8/22/19 13:07	BGS	C
Volume in Water Column	36.03		Gallons		Field			8/22/19 13:07	BGS	C
Water Level After Purge	79.00		Feet		Field			8/22/19 13:07	BGS	C
Well Volumes Purged	1.07		Vol		Field			8/22/19 13:07	BGS	C



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ANALYTICAL RESULTS

Workorder: 3053612 3rd QTR 2019 GWMP-FORM 19Q

 Lab ID: **3053612003**
 Sample ID: **FFMP032W**

 Date Collected: 8/22/2019 13:47 Matrix: Ground Water
 Date Received: 8/22/2019 16:51

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			8/29/19 04:22	PDK	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			8/29/19 04:22	PDK	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/29/19 04:22	PDK	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/29/19 04:22	PDK	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/29/19 04:22	PDK	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/29/19 04:22	PDK	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/29/19 04:22	PDK	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			8/29/19 04:22	PDK	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			8/29/19 04:22	PDK	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			8/29/19 04:22	PDK	G
Toluene	ND		ug/L	1.0	SW846 8260B			8/29/19 04:22	PDK	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			8/29/19 04:22	PDK	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			8/29/19 04:22	PDK	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			8/29/19 04:22	PDK	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			8/29/19 04:22	PDK	G
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	128		%	62 - 133	SW846 8260B			8/29/19 04:22	PDK	G
4-Bromofluorobenzene (S)	102		%	79 - 114	SW846 8260B			8/29/19 04:22	PDK	G
Dibromofluoromethane (S)	104		%	78 - 116	SW846 8260B			8/29/19 04:22	PDK	G
Toluene-d8 (S)	110		%	76 - 127	SW846 8260B			8/29/19 04:22	PDK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	67		mg/L	5	SM2320B-2011			8/28/19 08:15	MBW	B
Alkalinity, Total	67	3	mg/L	5	SM2320B-2011			8/28/19 08:15	MBW	B
Ammonia-N	0.572		mg/L	0.100	D6919-09			8/30/19 07:16	AK	A
Chemical Oxygen Demand (COD)	ND	1	mg/L	15	EPA 410.4			8/28/19 13:26	AK	A
Chloride	21.9		mg/L	2.0	EPA 300.0			8/23/19 06:33	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			8/23/19 06:33	CHW	B
Nitrate-N	ND		mg/L	0.20	EPA 300.0			8/23/19 06:33	CHW	B
pH	7.33	2	pH_Units		S4500HB-11			8/28/19 08:15	MBW	B
Phenolics	ND		mg/L	0.005	SW846 9066	8/27/19 13:01	C_D	8/28/19 08:23	C_D	F
Specific Conductance	172		umhos/cm	1	SW846 9050A			8/28/19 08:15	MBW	B
Sulfate	ND		mg/L	2.0	EPA 300.0			8/23/19 06:33	CHW	B
Total Dissolved Solids	76		mg/L	5	S2540C-11			8/28/19 16:41	D1C	B
Total Organic Carbon (TOC)	0.85		mg/L	0.50	SW846 9060A			8/30/19 16:03	PAG	D
Turbidity	95.5		NTU	0.10	SM2130B-2011			8/23/19 07:16	R2B	B

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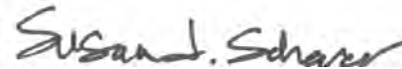
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ANALYTICAL RESULTS

Workorder: 3053612 3rd QTR 2019 GWMP-FORM 19Q

 Lab ID: **3053612003** Date Collected: 8/22/2019 13:47 Matrix: Ground Water
 Sample ID: **FFMP032W** Date Received: 8/22/2019 16:51

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	15.4		mg/L	0.11	SW846 6010C	8/26/19 18:30	SXC	8/27/19 18:49	SRT	J1
Iron, Total	5.8		mg/L	0.067	SW846 6010C	8/26/19 18:30	SXC	8/27/19 18:49	SRT	J1
Magnesium, Total	4.9		mg/L	0.11	SW846 6010C	8/26/19 18:30	SXC	8/27/19 18:49	SRT	J1
Manganese, Total	0.63		mg/L	0.0056	SW846 6010C	8/26/19 18:30	SXC	8/27/19 18:49	SRT	J1
Potassium, Total	1.2		mg/L	0.56	SW846 6010C	8/26/19 18:30	SXC	8/27/19 18:49	SRT	J1
Sodium, Total	13.2		mg/L	0.56	SW846 6010C	8/26/19 18:30	SXC	8/27/19 18:49	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	47.27		Feet		Field			8/22/19 13:47	BGS	C
Elev Top MW Casing above MSL	594.09		Feet		Field			8/22/19 13:47	BGS	C
Flow Rate	0.92		gal/min		Field			8/22/19 13:47	BGS	C
Ground Water Elevation	546.82		ft/MSL		Field			8/22/19 13:47	BGS	C
pH, Field (SM4500B)	6.60		pH_Units		Field			8/22/19 13:47	BGS	C
Sample Depth	62.00		Feet		Field			8/22/19 13:47	BGS	C
Specific Conductance, Field	213		umhos/cm	1	Field			8/22/19 13:47	BGS	C
Temperature	15.15		Deg. C		Field			8/22/19 13:47	BGS	C
Total Well Depth	77.60		Feet		Field			8/22/19 13:47	BGS	C
Volume in Water Column	44.59		Gallons		Field			8/22/19 13:47	BGS	C
Water Level After Purge	66.95		Feet		Field			8/22/19 13:47	BGS	C
Well Volumes Purged	1.00		Vol		Field			8/22/19 13:47	BGS	C



 Ms. Susan J Scherer
 Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3053612 3rd QTR 2019 GWMP-FORM 19Q

Lab ID: **3053612004**

Date Collected: 8/22/2019 15:02

Matrix: Ground Water

Sample ID: **FFMP033W**

Date Received: 8/22/2019 16:51

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			8/29/19 04:45	PDK	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			8/29/19 04:45	PDK	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/29/19 04:45	PDK	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/29/19 04:45	PDK	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/29/19 04:45	PDK	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/29/19 04:45	PDK	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/29/19 04:45	PDK	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			8/29/19 04:45	PDK	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			8/29/19 04:45	PDK	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			8/29/19 04:45	PDK	G
Toluene	ND		ug/L	1.0	SW846 8260B			8/29/19 04:45	PDK	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			8/29/19 04:45	PDK	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			8/29/19 04:45	PDK	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			8/29/19 04:45	PDK	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			8/29/19 04:45	PDK	G
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	130		%	62 - 133	SW846 8260B			8/29/19 04:45	PDK	G
4-Bromofluorobenzene (S)	101		%	79 - 114	SW846 8260B			8/29/19 04:45	PDK	G
Dibromofluoromethane (S)	107		%	78 - 116	SW846 8260B			8/29/19 04:45	PDK	G
Toluene-d8 (S)	109		%	76 - 127	SW846 8260B			8/29/19 04:45	PDK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	43		mg/L	5	SM2320B-2011			8/28/19 08:23	MBW	B
Alkalinity, Total	43	2	mg/L	5	SM2320B-2011			8/28/19 08:23	MBW	B
Ammonia-N	0.694		mg/L	0.100	D6919-09			8/30/19 07:28	AK	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			8/28/19 13:26	AK	A
Chloride	41.0		mg/L	2.0	EPA 300.0			8/23/19 06:49	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			8/23/19 06:49	CHW	B
Nitrate-N	12.0		mg/L	0.20	EPA 300.0			8/23/19 06:49	CHW	B
pH	6.41	1	pH_Units		S4500HB-11			8/28/19 08:23	MBW	B
Phenolics	ND		mg/L	0.005	SW846 9066	8/27/19 13:01	C_D	8/28/19 08:23	C_D	F
Specific Conductance	298		umhos/cm	1	SW846 9050A			8/28/19 08:23	MBW	B
Sulfate	8.1		mg/L	2.0	EPA 300.0			8/23/19 06:49	CHW	B
Total Dissolved Solids	213		mg/L	5	S2540C-11			8/28/19 16:41	D1C	B
Total Organic Carbon (TOC)	0.60		mg/L	0.50	SW846 9060A			8/30/19 16:03	PAG	D
Turbidity	3.13		NTU	0.10	SM2130B-2011			8/23/19 07:16	R2B	B

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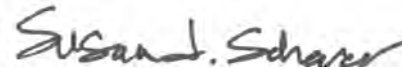
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ANALYTICAL RESULTS

Workorder: 3053612 3rd QTR 2019 GWMP-FORM 19Q

Lab ID: **3053612004** Date Collected: 8/22/2019 15:02 Matrix: Ground Water
 Sample ID: **FFMP033W** Date Received: 8/22/2019 16:51

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	26.6		mg/L	0.11	SW846 6010C	8/26/19 18:30	SXC	8/27/19 18:53	SRT	J1
Iron, Total	4.5		mg/L	0.067	SW846 6010C	8/26/19 18:30	SXC	8/27/19 18:53	SRT	J1
Magnesium, Total	8.9		mg/L	0.11	SW846 6010C	8/26/19 18:30	SXC	8/27/19 18:53	SRT	J1
Manganese, Total	0.48		mg/L	0.0056	SW846 6010C	8/26/19 18:30	SXC	8/27/19 18:53	SRT	J1
Potassium, Total	1.5		mg/L	0.56	SW846 6010C	8/26/19 18:30	SXC	8/27/19 18:53	SRT	J1
Sodium, Total	13.6		mg/L	0.56	SW846 6010C	8/26/19 18:30	SXC	8/27/19 18:53	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	17.00		Feet		Field			8/22/19 15:02	BGS	C
Elev Top MW Casing above MSL	516.52		Feet		Field			8/22/19 15:02	BGS	C
Flow Rate	1.97		gal/min		Field			8/22/19 15:02	BGS	C
Ground Water Elevation	499.52		ft/MSL		Field			8/22/19 15:02	BGS	C
pH, Field (SM4500B)	4.28		pH_Units		Field			8/22/19 15:02	BGS	C
Sample Depth	79.00		Feet		Field			8/22/19 15:02	BGS	C
Specific Conductance, Field	349		umhos/cm	1	Field			8/22/19 15:02	BGS	C
Temperature	12.58		Deg. C		Field			8/22/19 15:02	BGS	C
Total Well Depth	100.00		Feet		Field			8/22/19 15:02	BGS	C
Volume in Water Column	122.01		Gallons		Field			8/22/19 15:02	BGS	C
Water Level After Purge	28.25		Feet		Field			8/22/19 15:02	BGS	C
Well Volumes Purged	0.97		Vol		Field			8/22/19 15:02	BGS	C



Ms. Susan J Scherer
 Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3053612 3rd QTR 2019 GWMP-FORM 19Q

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
3053612001	1	FFMP031W	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
3053612001	2	FFMP031W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3053612002	1	FFMP002W	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
3053612002	2	FFMP002W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3053612002	3	FFMP002W	EPA 300.0	Nitrate-N
The sample was originally run within hold time, but required further analysis that exceeded hold time.				
3053612003	1	FFMP032W	EPA 410.4	Chemical Oxygen Demand (COD)
The recovery of the Matrix Spike (MS) associated to this analyte was outside of the established control limits.				
3053612003	2	FFMP032W	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
3053612003	3	FFMP032W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3053612004	1	FFMP033W	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
3053612004	2	FFMP033W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				

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Mexico: Monterrey

ANALYSIS - PREP METHOD CROSS REFERENCE TABLE

Workorder: 3053612 3rd QTR 2019 GWMP-FORM 19Q

Lab ID	Sample ID	Analysis Method	Prep Method
3053612001	FFMP031W	D6919-09	
3053612001	FFMP031W	EPA 300.0	
3053612001	FFMP031W	EPA 410.4	
3053612001	FFMP031W	Field	
3053612001	FFMP031W	S2540C-11	
3053612001	FFMP031W	S4500HB-11	
3053612001	FFMP031W	SM2130B-2011	
3053612001	FFMP031W	SM2320B-2011	
3053612001	FFMP031W	SW846 6010C	SW846 3015
3053612001	FFMP031W	SW846 8260B	
3053612001	FFMP031W	SW846 9050A	
3053612001	FFMP031W	SW846 9060A	
3053612001	FFMP031W	SW846 9066	420.4/9066
3053612002	FFMP002W	D6919-09	
3053612002	FFMP002W	EPA 300.0	
3053612002	FFMP002W	EPA 410.4	
3053612002	FFMP002W	Field	
3053612002	FFMP002W	S2540C-11	
3053612002	FFMP002W	S4500HB-11	
3053612002	FFMP002W	SM2130B-2011	
3053612002	FFMP002W	SM2320B-2011	
3053612002	FFMP002W	SW846 6010C	SW846 3015
3053612002	FFMP002W	SW846 8260B	
3053612002	FFMP002W	SW846 9050A	
3053612002	FFMP002W	SW846 9060A	
3053612002	FFMP002W	SW846 9066	420.4/9066
3053612003	FFMP032W	D6919-09	
3053612003	FFMP032W	EPA 300.0	
3053612003	FFMP032W	EPA 410.4	
3053612003	FFMP032W	Field	
3053612003	FFMP032W	S2540C-11	
3053612003	FFMP032W	S4500HB-11	
3053612003	FFMP032W	SM2130B-2011	
3053612003	FFMP032W	SM2320B-2011	
3053612003	FFMP032W	SW846 6010C	SW846 3015
3053612003	FFMP032W	SW846 8260B	
3053612003	FFMP032W	SW846 9050A	
3053612003	FFMP032W	SW846 9060A	
3053612003	FFMP032W	SW846 9066	420.4/9066
3053612004	FFMP033W	D6919-09	
3053612004	FFMP033W	EPA 300.0	
3053612004	FFMP033W	EPA 410.4	
3053612004	FFMP033W	Field	
3053612004	FFMP033W	S2540C-11	
3053612004	FFMP033W	S4500HB-11	
3053612004	FFMP033W	SM2130B-2011	

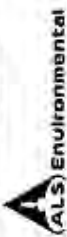
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ANALYSIS - PREP METHOD CROSS REFERENCE TABLE

Workorder: 3053612 3rd QTR 2019 GWMP-FORM 19Q

Lab ID	Sample ID	Analysis Method	Prep Method
3053612004	FFMP033W	SM2320B-2011	
3053612004	FFMP033W	SW846 6010C	SW846 3015
3053612004	FFMP033W	SW846 8260B	
3053612004	FFMP033W	SW846 9050A	
3053612004	FFMP033W	SW846 9060A	
3053612004	FFMP033W	SW846 9066	420.4/9066

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Client Name: Lancaster County Solid Waste MA

Address: 1299 Harrisburg Pike, P.O. Box 4424

Lancaster, PA 17604

Contact: Mark Reider

Phone#: (717) 735-0193

Project Name#: Frey Farm Quarterly (GWMP)

Bill To: Lancaster County Solid Waste MA

TAT Normal-Standard TAT is 10-12 business days.
 Rush-Subject to ALS approval and surcharges.

Date Required: Approved By:

Email? -Y mreider@LCSWMA.com

Fax? -Y No.: (717) 397-9973

Sample Description/Location

(as it will appear on the lab report)

Sample ID	Sample Date	Time	Container Type	AG	AM	CG	PL	PL	PL	PL	PL
1. FFMP031W	08/22/19	1220	G GW	2	1	2	X	X	1	1	1
2. FFMP002W	08/22/19	1307	G GW	2	1	2	X	X	1	1	1
3. FFMP032W	08/22/19	1347	G GW	2	1	2	X	X	1	1	1
4. FFMP033W	08/22/19	1502	G GW	2	1	2	X	X	1	1	1
5											
6											
7											
8											
9											
10											

COC #: 3
ALS Quote

Receipt Information (completed by Receiving Lab)
 Cooler Temp: 0.1 Therm ID: 403
 No. of Coolers: Y N Initial

Custody Seals Present? (If present) Seals intact?
 Received on Ice?
 COC Labels Complete/Accurate?
 Cont. in Good Cond.?
 Correct Containers?
 Correct Sample Volumes?
 Correct Preservation?
 Headspace/Volatiles?

Courier/Tracking #: _____
 Sample/COC Comments:
 ALS Field Services: Pickup Labor
 Composite_Sampling Rental_Equipment
 Other:
 Special Processing: USACE Navy
 State Samples Collected In: NY NJ PA NC
 Reportable to PADEP? Yes
 Sample Disposal: Lab Special
 PWSID #: _____
 EDDS: Format Type: _____

CHAIN OF CUSTODY/ REQUEST FOR ANALYSIS
 ALL SHADED AREAS MUST BE COMPLETED BY THE CLIENT/
 SAMPLER. INSTRUCTIONS ON THE BACK.

Generated by ALS
 ANALYSES/METHOD REQUESTED
 Field Measurements
 VOC - Form 19C
 OOH
 Sample Depth for AUX Data
 NH3-N, COD
 Metals: Fe, Mn, Na, Ca, K, Mg
 PH, Cl, SPC, F, SO4, TDS, NO3,
 Alkalinity Bicarbonate
 Tub.

Enter Number of Containers Per Sample or Field Results Below.

LOGGED BY (signature):
 REVIEWED BY (signature):
 Received By / Company Name: *Mark Reider* / *ALS*
 Date: 8/22/19
 Time: 1651

* G=Grab; C=Composite **Matrix - Al=Air; DW=Drinking Water; GW=Groundwater; OL=Oil; OL=Other Liquid; SL=Sludge; SO=Soil; WP=Wipe; WW=Wastewater
 ALS ENVIRONMENTAL SHIPPING ADDRESS: 34 DOGWOOD LANE, MIDDLETOWN, PA 17057
 Rev 8/04



301 Fulling Mill Road
Middletown, PA 17057

P: (717) 944-5541

F: (717) 944-1430

Condition of Sample Receipt Form

Client: LESWA Work Order #: 3053012 Initials: lw Date: 8-23-19

- | | | | |
|--|-----------------|-----|---------------|
| 1. Were airbills / tracking numbers present and recorded?..... | NONE | YES | NO |
| Tracking number: _____ | | | |
| 2. Are Custody Seals on shipping containers intact?..... | NONE | YES | NO |
| 3. Are Custody Seals on sample containers intact?..... | NONE | YES | NO |
| 4. Is there a COC (Chain-of-Custody) present?..... | NONE | YES | NO |
| 5. Are the COC and bottle labels complete, legible and in agreement?..... | NONE | YES | NO |
| 5a. Does the COC contain sample locations?..... | NONE | YES | NO |
| 5b. Does the COC contain date and time of sample collection for all samples?..... | NONE | YES | NO |
| 5c. Does the COC contain sample collectors name?..... | NONE | YES | NO |
| 5d. Does the COC note the type(s) of preservation for all bottles?..... | NONE | YES | NO |
| 5e. Does the COC note the number of bottles submitted for each sample?..... | NONE | YES | NO |
| 5f. Does the COC note the type of sample, composite or grab?..... | NONE | YES | NO |
| 5g. Does the COC note the matrix of the sample(s)?..... | NONE | YES | NO |
| 6. Are all aqueous samples requiring preservation preserved correctly?..... | N/A | YES | NO |
| 7. Were all samples placed in the proper containers for the requested analyses, with sufficient volume?..... | | YES | NO |
| 8. Are all samples within holding times for the requested analyses?..... | | YES | NO |
| 9. Were all sample containers received intact and headspace free when required? (not broken, leaking, frozen, etc.)..... | | YES | NO |
| 10. Did we receive trip blanks (applies only for methods EPA 504, EPA 524.2 and 1631E (LL Hg)?..... | NONE | YES | NO |
| 11. Were the samples received on ice?..... | | YES | NO |
| 12. Were sample temperatures measured at 0.0-6.0°C..... | | YES | NO |
| 13. Are the samples DW matrix ? If YES, fill out Reportable Drinking Water questions below..... | | YES | NO |
| 13a. Are the samples required for SDWA compliance reporting?..... | N/A | YES | NO |
| 13b. Did the client provide a SDWA PWS ID#?..... | N/A | YES | NO |
| 13c. Are all aqueous unpreserved SDWA samples pH 5-9?..... | N/A | YES | NO |
| 13d. Did the client provide the SDWA sample location ID/Description?..... | N/A | YES | NO |
| 13e. Did the client provide the SDWA sample type (D, E, R, C, P, S)?..... | N/A | YES | NO |

Cooler #: 1 _____

Temperature (°C): 0.1 _____

Thermometer ID: 403 _____

Radiological (µCi): _____

COMMENTS (Required for all NO responses above and any sample non-conformance):

Rev. 4/29/2019

September 11, 2019

Mr. Daniel Brown
Lancaster County Solid Waste Authority
1299 Hbg Pike, P.O. Box 4425
Lancaster, PA 17604

Certificate of Analysis

Revised Report - 9/11/2019 5:02:12 PM - See workorder comment section for explanation

Project Name:	FREY FARM	Workorder:	3053286
Purchase Order:	PO1000126	Workorder ID:	3rd QTR 2019 GWMP-FORM 19Q

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory between Wednesday, August 21, 2019 and Friday, August 30, 2019.

The ALS Environmental laboratory in Middletown, Pennsylvania is a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory and as such, certifies that all applicable test results meet the requirements of NELAP.

If you have any questions regarding this certificate of analysis, please contact Ms. Susan J Scherer (Project Coordinator) at (717) 944-5541.

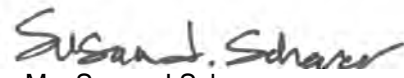
Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications section of the ALS website at www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads.

This laboratory report may not be reproduced, except in full, without the written approval of ALS Environmental.

ALS Spring City: 10 Riverside Drive, Spring City, PA 19475 610-948-4903

CC: Mr. Nicholas Rogers , Ms. Jordan Gallagher , Mr. Jeff Musser

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.



Ms. Susan J Scherer
Project Coordinator

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SAMPLE SUMMARY

Workorder: 3053286 3rd QTR 2019 GWMP-FORM 19Q

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
3053286001	FFMP028W	Ground Water	8/21/2019 09:57	8/21/2019 15:49	Mr. Brian G Shade
3053286002	FFMP025W	Ground Water	8/21/2019 10:36	8/21/2019 15:49	Mr. Brian G Shade
3053286003	FFMP034W	Ground Water	8/21/2019 12:43	8/30/2019 15:34	Mr. Brian G Shade
3053286004	FFMP02SW	Ground Water	8/21/2019 13:14	8/21/2019 15:49	Mr. Brian G Shade
3053286005	FFMP02DW	Ground Water	8/21/2019 14:28	8/21/2019 15:49	Mr. Brian G Shade

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SAMPLE SUMMARY

Workorder: 3053286 3rd QTR 2019 GWMP-FORM 19Q

Notes

- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 - Field Services Sampling Plan).
- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
- The Chain of Custody document is included as part of this report.
- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are performed in the laboratory and are therefore analyzed out of hold time.
- Method references listed on this report beginning with the prefix "S" followed by a method number (such as S2310B-97) refer to methods from "Standard Methods for the Examination of Water and Wastewater".
- For microbiological analyses, the "Prepared" value is the date/time into the incubator and the "Analyzed" value is the date/time out the incubator.
- An Analysis-Prep Method Cross Reference Table is included after Analytical Results & Qualifiers section in this report.

Standard Acronyms/Flags

J	Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
U	Indicates that the analyte was Not Detected (ND)
N	Indicates presumptive evidence of the presence of a compound
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RDL	Reporting Detection Limit
ND	Not Detected - indicates that the analyte was Not Detected at the RDL
Cntr	Analysis was performed using this container
RegLmt	Regulatory Limit
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
%Rec	Percent Recovery
RPD	Relative Percent Difference
LOD	DoD Limit of Detection
LOQ	DoD Limit of Quantitation
DL	DoD Detection Limit
I	Indicates reported value is greater than or equal to the Method Detection Limit (MDL) but less than the Report Detection Limit (RDL)
(S)	Surrogate Compound
NC	Not Calculated
*	Result outside of QC limits

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PROJECT SUMMARY

Workorder: 3053286 3rd QTR 2019 GWMP-FORM 19Q

Workorder Comments

This work order was modified to report Form 8 VOC, Total Metals and Dissolved metals per email from Dan Brown. SB 09/03/19

Sample Comments

Lab ID: 3053286003

Sample ID: FFMP034W

Sample Type: SAMPLE

Original samples recieved on 08/21/19 at 15:49. Additional parameters added via email from Dan Brown on 8/30/19 @ 15:34. SB 09/03/19

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ANALYTICAL RESULTS

Workorder: 3053286 3rd QTR 2019 GWMP-FORM 19Q

Lab ID: **3053286001**

Date Collected: 8/21/2019 09:57

Matrix: Ground Water

Sample ID: **FFMP028W**

Date Received: 8/21/2019 15:49

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			8/28/19 16:23	TMP	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			8/28/19 16:23	TMP	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/28/19 16:23	TMP	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/28/19 16:23	TMP	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/28/19 16:23	TMP	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/28/19 16:23	TMP	G
trans-1,2-Dichloroethene	ND	2	ug/L	1.0	SW846 8260B			8/28/19 16:23	TMP	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			8/28/19 16:23	TMP	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			8/28/19 16:23	TMP	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			8/28/19 16:23	TMP	G
Toluene	ND		ug/L	1.0	SW846 8260B			8/28/19 16:23	TMP	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			8/28/19 16:23	TMP	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			8/28/19 16:23	TMP	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			8/28/19 16:23	TMP	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			8/28/19 16:23	TMP	G
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	125		%	62 - 133	SW846 8260B			8/28/19 16:23	TMP	G
4-Bromofluorobenzene (S)	103		%	79 - 114	SW846 8260B			8/28/19 16:23	TMP	G
Dibromofluoromethane (S)	105		%	78 - 116	SW846 8260B			8/28/19 16:23	TMP	G
Toluene-d8 (S)	111		%	76 - 127	SW846 8260B			8/28/19 16:23	TMP	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	33		mg/L	5	SM2320B-2011			8/28/19 04:02	MBW	B
Alkalinity, Total	33	3	mg/L	5	SM2320B-2011			8/28/19 04:02	MBW	B
Ammonia-N	ND		mg/L	0.100	D6919-09			8/30/19 08:41	NJA	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			8/27/19 14:27	AK	A
Chloride	88.8		mg/L	2.0	EPA 300.0			8/22/19 10:09	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			8/22/19 10:09	CHW	B
Nitrate-N	17.7		mg/L	0.20	EPA 300.0			8/22/19 10:09	CHW	B
pH	6.85	1	pH_Units		S4500HB-11			8/28/19 04:02	MBW	B
Phenolics	ND		mg/L	0.005	SW846 9066	8/23/19 14:19	C_D	8/26/19 05:46	C_D	F
Specific Conductance	572		umhos/cm	1	SW846 9050A			8/28/19 04:02	MBW	B
Sulfate	24.5		mg/L	2.0	EPA 300.0			8/22/19 10:09	CHW	B
Total Dissolved Solids	386		mg/L	5	S2540C-11			8/27/19 17:26	D1C	B
Total Organic Carbon (TOC)	0.98		mg/L	0.50	SW846 9060A			8/29/19 23:49	PAG	D
Turbidity	0.17		NTU	0.10	SM2130B-2011			8/22/19 07:12	R2B	B

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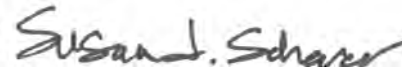
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ANALYTICAL RESULTS

Workorder: 3053286 3rd QTR 2019 GWMP-FORM 19Q

Lab ID: **3053286001** Date Collected: 8/21/2019 09:57 Matrix: Ground Water
 Sample ID: **FFMP028W** Date Received: 8/21/2019 15:49

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	41.1		mg/L	0.11	SW846 6010C	8/26/19 18:30	SXC	8/27/19 18:15	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	8/26/19 18:30	SXC	8/27/19 18:15	SRT	J1
Magnesium, Total	17.4		mg/L	0.11	SW846 6010C	8/26/19 18:30	SXC	8/27/19 18:15	SRT	J1
Manganese, Total	0.0088		mg/L	0.0056	SW846 6010C	8/26/19 18:30	SXC	8/27/19 18:15	SRT	J1
Potassium, Total	2.2		mg/L	0.56	SW846 6010C	8/26/19 18:30	SXC	8/27/19 18:15	SRT	J1
Sodium, Total	26.4		mg/L	0.56	SW846 6010C	8/26/19 18:30	SXC	8/27/19 18:15	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	16.01		Feet		Field			8/21/19 09:57	BGS	C
Elev Top MW Casing above MSL	465.00		Feet		Field			8/21/19 09:57	BGS	C
Flow Rate	2.68		gal/min		Field			8/21/19 09:57	BGS	C
Ground Water Elevation	448.99		ft/MSL		Field			8/21/19 09:57	BGS	C
pH, Field (SM4500B)	5.53		pH_Units		Field			8/21/19 09:57	BGS	C
Sample Depth	50.00		Feet		Field			8/21/19 09:57	BGS	C
Specific Conductance, Field	566		umhos/cm	1	Field			8/21/19 09:57	BGS	C
Temperature	10.55		Deg. C		Field			8/21/19 09:57	BGS	C
Total Well Depth	60.00		Feet		Field			8/21/19 09:57	BGS	C
Volume in Water Column	64.67		Gallons		Field			8/21/19 09:57	BGS	C
Water Level After Purge	37.73		Feet		Field			8/21/19 09:57	BGS	C
Well Volumes Purged	2.49		Vol		Field			8/21/19 09:57	BGS	C



Ms. Susan J Scherer
 Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3053286 3rd QTR 2019 GWMP-FORM 19Q

Lab ID: **3053286002**

Date Collected: 8/21/2019 10:36

Matrix: Ground Water

Sample ID: **FFMP025W**

Date Received: 8/21/2019 15:49

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			8/28/19 16:45	TMP	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			8/28/19 16:45	TMP	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/28/19 16:45	TMP	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/28/19 16:45	TMP	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/28/19 16:45	TMP	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/28/19 16:45	TMP	G
trans-1,2-Dichloroethene	ND	2	ug/L	1.0	SW846 8260B			8/28/19 16:45	TMP	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			8/28/19 16:45	TMP	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			8/28/19 16:45	TMP	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			8/28/19 16:45	TMP	G
Toluene	ND		ug/L	1.0	SW846 8260B			8/28/19 16:45	TMP	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			8/28/19 16:45	TMP	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			8/28/19 16:45	TMP	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			8/28/19 16:45	TMP	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			8/28/19 16:45	TMP	G
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	124		%	62 - 133	SW846 8260B			8/28/19 16:45	TMP	G
4-Bromofluorobenzene (S)	101		%	79 - 114	SW846 8260B			8/28/19 16:45	TMP	G
Dibromofluoromethane (S)	105		%	78 - 116	SW846 8260B			8/28/19 16:45	TMP	G
Toluene-d8 (S)	109		%	76 - 127	SW846 8260B			8/28/19 16:45	TMP	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	40		mg/L	5	SM2320B-2011			8/28/19 04:11	MBW	B
Alkalinity, Total	40	3	mg/L	5	SM2320B-2011			8/28/19 04:11	MBW	B
Ammonia-N	0.137		mg/L	0.100	D6919-09			8/28/19 21:19	AK	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			8/27/19 14:27	AK	A
Chloride	56.8		mg/L	2.0	EPA 300.0			8/22/19 10:25	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			8/22/19 10:25	CHW	B
Nitrate-N	11.5		mg/L	0.20	EPA 300.0			8/22/19 10:25	CHW	B
pH	7.07	1	pH_Units		S4500HB-11			8/28/19 04:11	MBW	B
Phenolics	ND		mg/L	0.005	SW846 9066	8/27/19 13:01	C_D	8/28/19 08:23	C_D	F
Specific Conductance	402		umhos/cm	1	SW846 9050A			8/28/19 04:11	MBW	B
Sulfate	23.1		mg/L	2.0	EPA 300.0			8/22/19 10:25	CHW	B
Total Dissolved Solids	528		mg/L	5	S2540C-11			8/27/19 17:26	D1C	B
Total Organic Carbon (TOC)	1.1		mg/L	0.50	SW846 9060A			8/29/19 23:49	PAG	D
Turbidity	0.50		NTU	0.10	SM2130B-2011			8/22/19 07:12	R2B	B

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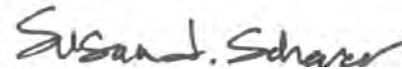
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ANALYTICAL RESULTS

Workorder: 3053286 3rd QTR 2019 GWMP-FORM 19Q

Lab ID: **3053286002** Date Collected: 8/21/2019 10:36 Matrix: Ground Water
Sample ID: **FFMP025W** Date Received: 8/21/2019 15:49

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	27.4		mg/L	0.11	SW846 6010C	8/26/19 18:30	SXC	8/27/19 18:19	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	8/26/19 18:30	SXC	8/27/19 18:19	SRT	J1
Magnesium, Total	13.0		mg/L	0.11	SW846 6010C	8/26/19 18:30	SXC	8/27/19 18:19	SRT	J1
Manganese, Total	0.0063		mg/L	0.0056	SW846 6010C	8/26/19 18:30	SXC	8/27/19 18:19	SRT	J1
Potassium, Total	2.2		mg/L	0.56	SW846 6010C	8/26/19 18:30	SXC	8/27/19 18:19	SRT	J1
Sodium, Total	21.7		mg/L	0.56	SW846 6010C	8/26/19 18:30	SXC	8/27/19 18:19	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	26.83		Feet		Field			8/21/19 10:36	BGS	C
Elev Top MW Casing above MSL	476.80		Feet		Field			8/21/19 10:36	BGS	C
Flow Rate	3.70		gal/min		Field			8/21/19 10:36	BGS	C
Ground Water Elevation	449.97		ft/MSL		Field			8/21/19 10:36	BGS	C
pH, Field (SM4500B)	5.22		pH_Units		Field			8/21/19 10:36	BGS	C
Sample Depth	39.00		Feet		Field			8/21/19 10:36	BGS	C
Specific Conductance, Field	416		umhos/cm	1	Field			8/21/19 10:36	BGS	C
Temperature	9.93		Deg. C		Field			8/21/19 10:36	BGS	C
Total Well Depth	41.50		Feet		Field			8/21/19 10:36	BGS	C
Volume in Water Column	21.56		Gallons		Field			8/21/19 10:36	BGS	C
Water Level After Purge	27.35		Feet		Field			8/21/19 10:36	BGS	C
Well Volumes Purged	1.03		Vol		Field			8/21/19 10:36	BGS	C



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ANALYTICAL RESULTS

Workorder: 3053286 3rd QTR 2019 GWMP-FORM 19Q

Lab ID: **3053286003**

Date Collected: 8/21/2019 12:43

Matrix: Ground Water

Sample ID: **FFMP034W**

Date Received: 8/30/2019 15:34

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			8/28/19 17:08	TMP	G
Bromoform	ND		ug/L	1.0	SW846 8260B			8/28/19 17:08	TMP	G
Bromomethane	ND		ug/L	1.0	SW846 8260B			8/28/19 17:08	TMP	G
2-Butanone	ND		ug/L	10.0	SW846 8260B			8/28/19 17:08	TMP	G
Carbon Tetrachloride	ND		ug/L	1.0	SW846 8260B			8/28/19 17:08	TMP	G
Chlorobenzene	ND		ug/L	1.0	SW846 8260B			8/28/19 17:08	TMP	G
Chlorodibromomethane	ND		ug/L	1.0	SW846 8260B			8/28/19 17:08	TMP	G
Chloroethane	ND		ug/L	1.0	SW846 8260B			8/28/19 17:08	TMP	G
Chloromethane	ND		ug/L	1.0	SW846 8260B			8/28/19 17:08	TMP	G
3-Chloro-1-propene	ND		ug/L	1.0	SW846 8260B			8/28/19 17:08	TMP	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			8/28/19 17:08	TMP	G
1,2-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			8/28/19 17:08	TMP	G
1,3-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			8/28/19 17:08	TMP	G
1,4-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			8/28/19 17:08	TMP	G
Dichlorodifluoromethane	ND		ug/L	1.0	SW846 8260B			8/28/19 17:08	TMP	G
1,1-Dichloroethane	ND	7	ug/L	1.0	SW846 8260B			8/28/19 17:08	TMP	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/28/19 17:08	TMP	G
1,1-Dichloroethene	ND	4	ug/L	1.0	SW846 8260B			8/28/19 17:08	TMP	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/28/19 17:08	TMP	G
trans-1,2-Dichloroethene	ND	5,6	ug/L	1.0	SW846 8260B			8/28/19 17:08	TMP	G
1,2-Dichloropropane	ND		ug/L	1.0	SW846 8260B			8/28/19 17:08	TMP	G
cis-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			8/28/19 17:08	TMP	G
trans-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			8/28/19 17:08	TMP	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			8/28/19 17:08	TMP	G
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	SW846 8260B			8/28/19 17:08	TMP	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			8/28/19 17:08	TMP	G
1,1,1,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			8/28/19 17:08	TMP	G
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			8/28/19 17:08	TMP	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			8/28/19 17:08	TMP	G
Toluene	ND		ug/L	1.0	SW846 8260B			8/28/19 17:08	TMP	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			8/28/19 17:08	TMP	G
1,1,1-Trichloroethane	ND	8	ug/L	1.0	SW846 8260B			8/28/19 17:08	TMP	G
1,1,2-Trichloroethane	ND		ug/L	1.0	SW846 8260B			8/28/19 17:08	TMP	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			8/28/19 17:08	TMP	G
Trichlorofluoromethane	ND	2,3	ug/L	1.0	SW846 8260B			8/28/19 17:08	TMP	G
1,2,3-Trichloropropane	ND		ug/L	2.0	SW846 8260B			8/28/19 17:08	TMP	G

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ANALYTICAL RESULTS

Workorder: 3053286 3rd QTR 2019 GWMP-FORM 19Q

Lab ID: **3053286003** Date Collected: 8/21/2019 12:43 Matrix: Ground Water
Sample ID: **FFMP034W** Date Received: 8/30/2019 15:34

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			8/28/19 17:08	TMP	G
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	127		%	62 - 133	SW846 8260B			8/28/19 17:08	TMP	G
4-Bromofluorobenzene (S)	103		%	79 - 114	SW846 8260B			8/28/19 17:08	TMP	G
Dibromofluoromethane (S)	106		%	78 - 116	SW846 8260B			8/28/19 17:08	TMP	G
Toluene-d8 (S)	111		%	76 - 127	SW846 8260B			8/28/19 17:08	TMP	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	34		mg/L	5	SM2320B-2011			8/28/19 04:19	MBW	B
Alkalinity, Total	34	9	mg/L	5	SM2320B-2011			8/28/19 04:19	MBW	B
Ammonia-N	0.223		mg/L	0.100	D6919-09			8/28/19 21:32	AK	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			8/27/19 14:27	AK	A
Chloride	120		mg/L	2.0	EPA 300.0			8/22/19 10:40	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			8/22/19 10:40	CHW	B
Nitrate-N	9.2		mg/L	0.20	EPA 300.0			8/22/19 10:40	CHW	B
pH	7.03	1	pH_Units		S4500HB-11			8/28/19 04:19	MBW	B
Phenolics	ND		mg/L	0.005	SW846 9066	8/27/19 13:01	C_D	8/28/19 08:23	C_D	F
Specific Conductance	610		umhos/cm	1	SW846 9050A			8/28/19 04:19	MBW	B
Sulfate	29.9		mg/L	2.0	EPA 300.0			8/22/19 10:40	CHW	B
Total Dissolved Solids	423		mg/L	5	S2540C-11			8/27/19 17:26	D1C	B
Total Organic Carbon (TOC)	0.81		mg/L	0.50	SW846 9060A			8/29/19 23:49	PAG	D
Turbidity	7.83		NTU	0.10	SM2130B-2011			8/22/19 07:12	R2B	B
METALS										
Arsenic, Total	ND		mg/L	0.0090	SW846 6010C	8/26/19 18:30	SXC	8/27/19 18:23	SRT	J
Arsenic, Dissolved	ND		mg/L	0.0080	SW846 6010C	9/5/19 10:17	SRT	9/11/19 12:30	SRT	B
Barium, Total	0.037		mg/L	0.011	SW846 6010C	8/26/19 18:30	SXC	8/27/19 18:23	SRT	J
Barium, Dissolved	0.038		mg/L	0.010	SW846 6010C	9/5/19 10:17	SRT	9/11/19 12:30	SRT	B
Cadmium, Total	ND		mg/L	0.0022	SW846 6010C	8/26/19 18:30	SXC	8/27/19 18:23	SRT	J
Cadmium, Dissolved	ND		mg/L	0.0020	SW846 6010C	9/5/19 10:17	SRT	9/11/19 12:30	SRT	B
Calcium, Total	44.7		mg/L	0.11	SW846 6010C	8/26/19 18:30	SXC	8/27/19 18:23	SRT	J1
Calcium, Dissolved	41.5		mg/L	0.10	SW846 6010C	9/5/19 10:17	SRT	9/11/19 12:30	SRT	B
Chromium, Total	ND		mg/L	0.0056	SW846 6010C	8/26/19 18:30	SXC	8/27/19 18:23	SRT	J
Chromium, Dissolved	ND		mg/L	0.0050	SW846 6010C	9/5/19 10:17	SRT	9/11/19 12:30	SRT	B
Copper, Total	ND		mg/L	0.011	SW846 6010C	8/26/19 18:30	SXC	8/27/19 18:23	SRT	J
Copper, Dissolved	ND		mg/L	0.010	SW846 6010C	9/5/19 10:17	SRT	9/11/19 12:30	SRT	B
Iron, Total	0.49		mg/L	0.067	SW846 6010C	8/26/19 18:30	SXC	8/27/19 18:23	SRT	J1

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ANALYTICAL RESULTS

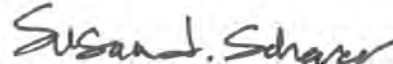
Workorder: 3053286 3rd QTR 2019 GWMP-FORM 19Q

Lab ID: 3053286003	Date Collected: 8/21/2019 12:43	Matrix: Ground Water
Sample ID: FFMP034W	Date Received: 8/30/2019 15:34	

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Iron, Dissolved	ND		mg/L	0.060	SW846 6010C	9/5/19 10:17	SRT	9/11/19 12:30	SRT	B
Lead, Total	ND		mg/L	0.0067	SW846 6010C	8/26/19 18:30	SXC	8/27/19 18:23	SRT	J
Lead, Dissolved	ND		mg/L	0.0060	SW846 6010C	9/5/19 10:17	SRT	9/11/19 12:30	SRT	B
Magnesium, Total	17.3		mg/L	0.11	SW846 6010C	8/26/19 18:30	SXC	8/27/19 18:23	SRT	J1
Magnesium, Dissolved	16.0		mg/L	0.10	SW846 6010C	9/5/19 10:17	SRT	9/11/19 12:30	SRT	B
Manganese, Total	0.066		mg/L	0.0056	SW846 6010C	8/26/19 18:30	SXC	8/27/19 18:23	SRT	J1
Manganese, Dissolved	0.071		mg/L	0.0050	SW846 6010C	9/5/19 10:17	SRT	9/11/19 12:30	SRT	B
Mercury, Total	ND		mg/L	0.00050	SW846 7470A	9/5/19 12:20	AHI	9/5/19 15:54	AHI	J
Mercury, Dissolved	ND		mg/L	0.00050	SW846 7470A	9/9/19 00:10	MSA	9/9/19 04:28	MSA	B
Potassium, Total	2.3		mg/L	0.56	SW846 6010C	8/26/19 18:30	SXC	8/27/19 18:23	SRT	J1
Potassium, Dissolved	2.4		mg/L	0.50	SW846 6010C	9/5/19 10:17	SRT	9/11/19 12:30	SRT	B
Selenium, Total	ND		mg/L	0.022	SW846 6010C	8/26/19 18:30	SXC	8/27/19 18:23	SRT	J
Selenium, Dissolved	ND		mg/L	0.020	SW846 6010C	9/5/19 10:17	SRT	9/11/19 12:30	SRT	B
Silver, Total	ND		mg/L	0.0044	SW846 6010C	8/26/19 18:30	SXC	8/27/19 18:23	SRT	J
Silver, Dissolved	ND		mg/L	0.0040	SW846 6010C	9/5/19 10:17	SRT	9/11/19 12:30	SRT	B
Sodium, Total	31.6		mg/L	0.56	SW846 6010C	8/26/19 18:30	SXC	8/27/19 18:23	SRT	J1
Sodium, Dissolved	31.6		mg/L	0.50	SW846 6010C	9/5/19 10:17	SRT	9/11/19 12:30	SRT	B
Zinc, Total	ND		mg/L	0.022	SW846 6010C	8/26/19 18:30	SXC	8/27/19 18:23	SRT	J
Zinc, Dissolved	ND		mg/L	0.020	SW846 6010C	9/5/19 10:17	SRT	9/11/19 12:30	SRT	B

FIELD PARAMETERS

Depth to Water Level	18.25		Feet		Field			8/21/19 12:43	BGS	C
Flow Rate	1.96		gal/min		Field			8/21/19 12:43	BGS	C
pH, Field (SM4500B)	4.62		pH_Units		Field			8/21/19 12:43	BGS	C
Sample Depth	28.85		Feet		Field			8/21/19 12:43	BGS	C
Specific Conductance, Field	622		umhos/cm	1	Field			8/21/19 12:43	BGS	C
Temperature	10.83		Deg. C		Field			8/21/19 12:43	BGS	C
Total Well Depth	121.00		Feet		Field			8/21/19 12:43	BGS	C
Volume in Water Column	151.04		Gallons		Field			8/21/19 12:43	BGS	C
Water Level After Purge	19.14		Feet		Field			8/21/19 12:43	BGS	C
Well Volumes Purged	1.17		Vol		Field			8/21/19 12:43	BGS	C


 Ms. Susan J Scherer
 Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3053286 3rd QTR 2019 GWMP-FORM 19Q

 Lab ID: **3053286004** Date Collected: 8/21/2019 13:14 Matrix: Ground Water
 Sample ID: **FFMP02SW** Date Received: 8/21/2019 15:49

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			8/28/19 17:30	TMP	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			8/28/19 17:30	TMP	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/28/19 17:30	TMP	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/28/19 17:30	TMP	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/28/19 17:30	TMP	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/28/19 17:30	TMP	G
trans-1,2-Dichloroethene	ND	2	ug/L	1.0	SW846 8260B			8/28/19 17:30	TMP	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			8/28/19 17:30	TMP	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			8/28/19 17:30	TMP	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			8/28/19 17:30	TMP	G
Toluene	ND		ug/L	1.0	SW846 8260B			8/28/19 17:30	TMP	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			8/28/19 17:30	TMP	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			8/28/19 17:30	TMP	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			8/28/19 17:30	TMP	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			8/28/19 17:30	TMP	G
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	129		%	62 - 133	SW846 8260B			8/28/19 17:30	TMP	G
4-Bromofluorobenzene (S)	103		%	79 - 114	SW846 8260B			8/28/19 17:30	TMP	G
Dibromofluoromethane (S)	108		%	78 - 116	SW846 8260B			8/28/19 17:30	TMP	G
Toluene-d8 (S)	112		%	76 - 127	SW846 8260B			8/28/19 17:30	TMP	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	14		mg/L	5	SM2320B-2011			8/28/19 05:02	MBW	B
Alkalinity, Total	14	3	mg/L	5	SM2320B-2011			8/28/19 05:02	MBW	B
Ammonia-N	0.139		mg/L	0.100	D6919-09			8/28/19 21:45	AK	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			8/27/19 14:27	AK	A
Chloride	130		mg/L	2.0	EPA 300.0			8/22/19 10:56	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			8/22/19 10:56	CHW	B
Nitrate-N	14.4		mg/L	0.20	EPA 300.0			8/22/19 10:56	CHW	B
pH	6.72	1	pH_Units		S4500HB-11			8/28/19 05:02	MBW	B
Phenolics	ND		mg/L	0.005	SW846 9066	8/27/19 13:01	C_D	8/28/19 08:23	C_D	F
Specific Conductance	644		umhos/cm	1	SW846 9050A			8/28/19 05:02	MBW	B
Sulfate	31.7		mg/L	2.0	EPA 300.0			8/22/19 10:56	CHW	B
Total Dissolved Solids	207		mg/L	5	S2540C-11			8/27/19 17:26	D1C	B
Total Organic Carbon (TOC)	1.6		mg/L	0.50	SW846 9060A			8/29/19 23:49	PAG	D
Turbidity	126		NTU	0.10	SM2130B-2011			8/22/19 07:12	R2B	B

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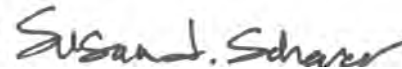
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ANALYTICAL RESULTS

Workorder: 3053286 3rd QTR 2019 GWMP-FORM 19Q

Lab ID: **3053286004** Date Collected: 8/21/2019 13:14 Matrix: Ground Water
 Sample ID: **FFMP02SW** Date Received: 8/21/2019 15:49

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	22.9		mg/L	0.11	SW846 6010C	8/26/19 18:30	SXC	8/27/19 18:27	SRT	J1
Iron, Total	9.6		mg/L	0.067	SW846 6010C	8/26/19 18:30	SXC	8/27/19 18:27	SRT	J1
Magnesium, Total	9.6		mg/L	0.11	SW846 6010C	8/26/19 18:30	SXC	8/27/19 18:27	SRT	J1
Manganese, Total	0.11		mg/L	0.0056	SW846 6010C	8/26/19 18:30	SXC	8/27/19 18:27	SRT	J1
Potassium, Total	5.3		mg/L	0.56	SW846 6010C	8/26/19 18:30	SXC	8/27/19 18:27	SRT	J1
Sodium, Total	79.6		mg/L	0.56	SW846 6010C	8/26/19 18:30	SXC	8/27/19 18:27	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	15.39		Feet		Field			8/21/19 13:15	BGS	C
Elev Top MW Casing above MSL	509.90		Feet		Field			8/21/19 13:15	BGS	C
Flow Rate	0.49		gal/min		Field			8/21/19 13:15	BGS	C
Ground Water Elevation	494.51		ft/MSL		Field			8/21/19 13:15	BGS	C
pH, Field (SM4500B)	5.23		pH_Units		Field			8/21/19 13:15	BGS	C
Sample Depth	18.00		Feet		Field			8/21/19 13:15	BGS	C
Specific Conductance, Field	702		umhos/cm	1	Field			8/21/19 13:15	BGS	C
Temperature	13.23		Deg. C		Field			8/21/19 13:15	BGS	C
Total Well Depth	22.70		Feet		Field			8/21/19 13:15	BGS	C
Volume in Water Column	4.75		Gallons		Field			8/21/19 13:15	BGS	C
Water Level After Purge	17.24		Feet		Field			8/21/19 13:15	BGS	C
Well Volumes Purged	1.24		Vol		Field			8/21/19 13:15	BGS	C



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 Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3053286 3rd QTR 2019 GWMP-FORM 19Q

 Lab ID: **3053286005** Date Collected: 8/21/2019 14:28 Matrix: Ground Water
 Sample ID: **FFMP02DW** Date Received: 8/21/2019 15:49

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			8/28/19 17:53	TMP	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			8/28/19 17:53	TMP	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/28/19 17:53	TMP	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/28/19 17:53	TMP	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/28/19 17:53	TMP	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/28/19 17:53	TMP	G
trans-1,2-Dichloroethene	ND	2	ug/L	1.0	SW846 8260B			8/28/19 17:53	TMP	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			8/28/19 17:53	TMP	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			8/28/19 17:53	TMP	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			8/28/19 17:53	TMP	G
Toluene	ND		ug/L	1.0	SW846 8260B			8/28/19 17:53	TMP	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			8/28/19 17:53	TMP	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			8/28/19 17:53	TMP	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			8/28/19 17:53	TMP	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			8/28/19 17:53	TMP	G
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	128		%	62 - 133	SW846 8260B			8/28/19 17:53	TMP	G
4-Bromofluorobenzene (S)	102		%	79 - 114	SW846 8260B			8/28/19 17:53	TMP	G
Dibromofluoromethane (S)	106		%	78 - 116	SW846 8260B			8/28/19 17:53	TMP	G
Toluene-d8 (S)	110		%	76 - 127	SW846 8260B			8/28/19 17:53	TMP	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	125		mg/L	5	SM2320B-2011			8/28/19 05:12	MBW	B
Alkalinity, Total	125	3	mg/L	5	SM2320B-2011			8/28/19 05:12	MBW	B
Ammonia-N	0.627		mg/L	0.100	D6919-09			8/28/19 21:58	AK	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			8/27/19 14:27	AK	A
Chloride	275		mg/L	5.0	EPA 300.0			8/24/19 20:04	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			8/22/19 11:11	CHW	B
Nitrate-N	8.9		mg/L	0.20	EPA 300.0			8/22/19 11:11	CHW	B
pH	7.85	1	pH_Units		S4500HB-11			8/28/19 05:12	MBW	B
Phenolics	ND		mg/L	0.005	SW846 9066	8/27/19 13:01	C_D	8/28/19 08:23	C_D	F
Specific Conductance	1250		umhos/cm	1	SW846 9050A			8/28/19 05:12	MBW	B
Sulfate	29.1		mg/L	2.0	EPA 300.0			8/22/19 11:11	CHW	B
Total Dissolved Solids	805		mg/L	5	S2540C-11			8/27/19 17:26	D1C	B
Total Organic Carbon (TOC)	0.65		mg/L	0.50	SW846 9060A			8/29/19 23:49	PAG	D
Turbidity	5.15		NTU	0.10	SM2130B-2011			8/22/19 07:12	R2B	B

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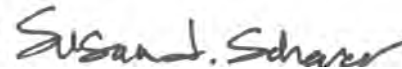
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ANALYTICAL RESULTS

Workorder: 3053286 3rd QTR 2019 GWMP-FORM 19Q

Lab ID: **3053286005** Date Collected: 8/21/2019 14:28 Matrix: Ground Water
 Sample ID: **FFMP02DW** Date Received: 8/21/2019 15:49

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	104		mg/L	0.11	SW846 6010C	8/26/19 18:30	SXC	8/27/19 18:38	SRT	J1
Iron, Total	0.52		mg/L	0.067	SW846 6010C	8/26/19 18:30	SXC	8/27/19 18:38	SRT	J1
Magnesium, Total	16.1		mg/L	0.11	SW846 6010C	8/26/19 18:30	SXC	8/27/19 18:38	SRT	J1
Manganese, Total	0.43		mg/L	0.0056	SW846 6010C	8/26/19 18:30	SXC	8/27/19 18:38	SRT	J1
Potassium, Total	1.7		mg/L	0.56	SW846 6010C	8/26/19 18:30	SXC	8/27/19 18:38	SRT	J1
Sodium, Total	99.1		mg/L	0.56	SW846 6010C	8/26/19 18:30	SXC	8/27/19 18:38	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	19.57		Feet		Field			8/21/19 14:28	BGS	C
Elev Top MW Casing above MSL	509.60		Feet		Field			8/21/19 14:28	BGS	C
Flow Rate	1.06		gal/min		Field			8/21/19 14:28	BGS	C
Ground Water Elevation	490.03		ft/MSL		Field			8/21/19 14:28	BGS	C
pH, Field (SM4500B)	7.03		pH_Units		Field			8/21/19 14:28	BGS	C
Sample Depth	120.00		Feet		Field			8/21/19 14:28	BGS	C
Specific Conductance, Field	1250		umhos/cm	1	Field			8/21/19 14:28	BGS	C
Temperature	12.36		Deg. C		Field			8/21/19 14:28	BGS	C
Total Well Depth	153.00		Feet		Field			8/21/19 14:28	BGS	C
Volume in Water Column	196.14		Gallons		Field			8/21/19 14:28	BGS	C
Water Level After Purge	53.09		Feet		Field			8/21/19 14:28	BGS	C
Well Volumes Purged	0.32		Vol		Field			8/21/19 14:28	BGS	C



Ms. Susan J Scherer
 Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3053286 3rd QTR 2019 GWMP-FORM 19Q

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
3053286001	1	FFMP028W	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
3053286001	2	FFMP028W	SW846 8260B	trans-1,2-Dichloroethene
The QC sample type LCS for method SW846 8260B was outside the control limits for the analyte trans-1,2-Dichloroethene. The % Recovery was reported as 123 and the control limits were 71 to 122.				
3053286001	3	FFMP028W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3053286002	1	FFMP025W	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
3053286002	2	FFMP025W	SW846 8260B	trans-1,2-Dichloroethene
The QC sample type LCS for method SW846 8260B was outside the control limits for the analyte trans-1,2-Dichloroethene. The % Recovery was reported as 123 and the control limits were 71 to 122.				
3053286002	3	FFMP025W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3053286003	1	FFMP034W	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
3053286003	2	FFMP034W	SW846 8260B	Trichlorofluoromethane
The QC sample type MS for method SW846 8260B was outside the control limits for the analyte Trichlorofluoromethane. The % Recovery was reported as 146 and the control limits were 38 to 123.				
3053286003	3	FFMP034W	SW846 8260B	Trichlorofluoromethane
The QC sample type MSD for method SW846 8260B was outside the control limits for the analyte Trichlorofluoromethane. The % Recovery was reported as 125 and the control limits were 38 to 123.				
3053286003	4	FFMP034W	SW846 8260B	1,1-Dichloroethene
The QC sample type MS for method SW846 8260B was outside the control limits for the analyte 1,1-Dichloroethene. The % Recovery was reported as 138 and the control limits were 63 to 128.				
3053286003	5	FFMP034W	SW846 8260B	trans-1,2-Dichloroethene
The QC sample type MS for method SW846 8260B was outside the control limits for the analyte trans-1,2-Dichloroethene. The % Recovery was reported as 135 and the control limits were 71 to 122.				
3053286003	6	FFMP034W	SW846 8260B	trans-1,2-Dichloroethene
The QC sample type LCS for method SW846 8260B was outside the control limits for the analyte trans-1,2-Dichloroethene. The % Recovery was reported as 123 and the control limits were 71 to 122.				
3053286003	7	FFMP034W	SW846 8260B	1,1-Dichloroethene
The QC sample type MS for method SW846 8260B was outside the control limits for the analyte 1,1-Dichloroethene. The % Recovery was reported as 128 and the control limits were 78 to 124.				
3053286003	8	FFMP034W	SW846 8260B	1,1,1-Trichloroethane
The QC sample type MS for method SW846 8260B was outside the control limits for the analyte 1,1,1-Trichloroethane. The % Recovery was reported as 131 and the control limits were 66 to 130.				
3053286003	9	FFMP034W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				

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ANALYTICAL RESULTS

Workorder: 3053286 3rd QTR 2019 GWMP-FORM 19Q

3053286004	1	FFMP02SW	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
3053286004	2	FFMP02SW	SW846 8260B	trans-1,2-Dichloroethene
The QC sample type LCS for method SW846 8260B was outside the control limits for the analyte trans-1,2-Dichloroethene. The % Recovery was reported as 123 and the control limits were 71 to 122.				
3053286004	3	FFMP02SW	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3053286005	1	FFMP02DW	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
3053286005	2	FFMP02DW	SW846 8260B	trans-1,2-Dichloroethene
The QC sample type LCS for method SW846 8260B was outside the control limits for the analyte trans-1,2-Dichloroethene. The % Recovery was reported as 123 and the control limits were 71 to 122.				
3053286005	3	FFMP02DW	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				

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ANALYSIS - PREP METHOD CROSS REFERENCE TABLE

Workorder: 3053286 3rd QTR 2019 GWMP-FORM 19Q

Lab ID	Sample ID	Analysis Method	Prep Method
3053286001	FFMP028W	D6919-09	
3053286001	FFMP028W	EPA 300.0	
3053286001	FFMP028W	EPA 410.4	
3053286001	FFMP028W	Field	
3053286001	FFMP028W	S2540C-11	
3053286001	FFMP028W	S4500HB-11	
3053286001	FFMP028W	SM2130B-2011	
3053286001	FFMP028W	SM2320B-2011	
3053286001	FFMP028W	SW846 6010C	SW846 3015
3053286001	FFMP028W	SW846 8260B	
3053286001	FFMP028W	SW846 9050A	
3053286001	FFMP028W	SW846 9060A	
3053286001	FFMP028W	SW846 9066	420.4/9066
3053286002	FFMP025W	D6919-09	
3053286002	FFMP025W	EPA 300.0	
3053286002	FFMP025W	EPA 410.4	
3053286002	FFMP025W	Field	
3053286002	FFMP025W	S2540C-11	
3053286002	FFMP025W	S4500HB-11	
3053286002	FFMP025W	SM2130B-2011	
3053286002	FFMP025W	SM2320B-2011	
3053286002	FFMP025W	SW846 6010C	SW846 3015
3053286002	FFMP025W	SW846 8260B	
3053286002	FFMP025W	SW846 9050A	
3053286002	FFMP025W	SW846 9060A	
3053286002	FFMP025W	SW846 9066	420.4/9066
3053286003	FFMP034W	D6919-09	
3053286003	FFMP034W	EPA 300.0	
3053286003	FFMP034W	EPA 410.4	
3053286003	FFMP034W	Field	
3053286003	FFMP034W	In-House	
3053286003	FFMP034W	S2540C-11	
3053286003	FFMP034W	S4500HB-11	
3053286003	FFMP034W	SM2130B-2011	
3053286003	FFMP034W	SM2320B-2011	
3053286003	FFMP034W	SW846 6010C	SW846 3015
3053286003	FFMP034W	SW846 6010C	SW846 6010C
3053286003	FFMP034W	SW846 7470A	SW846 7470A
3053286003	FFMP034W	SW846 8260B	
3053286003	FFMP034W	SW846 9050A	
3053286003	FFMP034W	SW846 9060A	
3053286003	FFMP034W	SW846 9066	420.4/9066
3053286004	FFMP02SW	D6919-09	
3053286004	FFMP02SW	EPA 300.0	
3053286004	FFMP02SW	EPA 410.4	
3053286004	FFMP02SW	Field	

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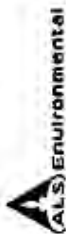
ANALYSIS - PREP METHOD CROSS REFERENCE TABLE

Workorder: 3053286 3rd QTR 2019 GWMP-FORM 19Q

Lab ID	Sample ID	Analysis Method	Prep Method
3053286004	FFMP02SW	S2540C-11	
3053286004	FFMP02SW	S4500HB-11	
3053286004	FFMP02SW	SM2130B-2011	
3053286004	FFMP02SW	SM2320B-2011	
3053286004	FFMP02SW	SW846 6010C	SW846 3015
3053286004	FFMP02SW	SW846 8260B	
3053286004	FFMP02SW	SW846 9050A	
3053286004	FFMP02SW	SW846 9060A	
3053286004	FFMP02SW	SW846 9066	420.4/9066
3053286005	FFMP02DW	D6919-09	
3053286005	FFMP02DW	EPA 300.0	
3053286005	FFMP02DW	EPA 410.4	
3053286005	FFMP02DW	Field	
3053286005	FFMP02DW	S2540C-11	
3053286005	FFMP02DW	S4500HB-11	
3053286005	FFMP02DW	SM2130B-2011	
3053286005	FFMP02DW	SM2320B-2011	
3053286005	FFMP02DW	SW846 6010C	SW846 3015
3053286005	FFMP02DW	SW846 8260B	
3053286005	FFMP02DW	SW846 9050A	
3053286005	FFMP02DW	SW846 9060A	
3053286005	FFMP02DW	SW846 9066	420.4/9066

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34 Dogwood Lane • Middletown, PA 17057 • T: 717.944.5611 • F: 717.944.1430
 1100 Lancaster Pike • P.O. Box 4424 • Middletown, PA 17057 • T: 717.944.5611 • F: 717.944.1430

CHAIN OF CUSTODY / REQUEST FOR ANALYSIS

ALL SHADED AREAS MUST BE COMPLETED BY THE CLIENT / SAMPLER. INSTRUCTIONS ON THE BACK.

Client Name: Lancaster County Solid Waste MA
 Address: 1299 Harrisburg Pike, P.O. Box 4424
 Lancaster, PA 17604

Contact: Mark Reider
 Phone#: (717) 735-0193
 Project Name#: Frey Farm Quarterly (GWMP)
 Bill To: Lancaster County Solid Waste MA

TAT Normal-Standard TAT is 10-12 business days.
 Rush-Subject to ALS approval and surcharges.
 Date Required: Approved By:
 Email? Y mreider@LCSWMA.com
 Fax? Y No.: (717) 397-9973

Sample Description/Location (as it will appear on the lab report)

Sample Date	Time
08/21/19	0957
08/21/19	1036
08/21/19	1243
08/21/19	1314
08/21/19	1428

Container Type	AG	AN	CG	PL	PL	PL	PL
40 ml	120 ml	40 ml	250 ml	120 ml	500 ml	500 ml	500 ml
HCl	H2SO4	HCl	H2SO4	HNO3	None	None	None

ANALYSES/METHOD REQUESTED

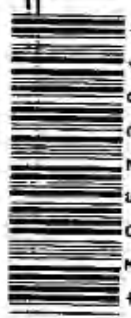
Field Measurements	VOC - Form 190	Sample Depth for AUX Data	Metals: Fe, Mn, Na, Ca, K, Mg	PH, CI, SpC, F, SO4, TDS, NO3	Alkalinity Bicarbonate Turb.

Enter Number of Containers Per Sample or Field Results Below.

Matrix	TOC	O-OH	VOC - Form 190	Field Measurements	Sample Depth for AUX Data	Metals: Fe, Mn, Na, Ca, K, Mg	PH, CI, SpC, F, SO4, TDS, NO3	Alkalinity Bicarbonate Turb.
G GW	2	1	2	X	X	1	1	1
G GW	2	1	2	X	X	1	1	1
G GW	2	1	2	X	X	1	1	1
G GW	2	1	2	X	X	1	1	1
G GW	2	1	2	X	X	1	1	1

Project Comments:
 Relinquished By/ Company Name: *Mark Reider* ALS
 Date: 8/21/19 1549
 Time: 1549
 Received By / Company Name: *[Signature]*
 Date: 8/21/19 1549
 Time: 1549

COC #:
 ALS Quo



Receipt Information (completed by Receiving Lab)
 Cooler Temp: 70 Therm ID: 318
 No. of Coolers: 1 Y N Initial: *[Signature]*

Custody Seals Present?
 (if present) Seals Intact?
 Received on Ice?
 COC Labels Complete/Accurate?
 Cont. in Good Cond.?
 Correct Containers?
 Correct Sample Volumes?
 Correct Preservation?
 Headspace/Volatiles?

Courier/Tracking #:
 Sample/COC Comments

ALS Field Services: Pickup Labor
 Composite_Sampling Rental_Equipment
 Other:

Special Processing:
 USACE Navy
 State Samples Collected In:
 NY NJ PA NC
 Sample Disposal:
 Lab Special
 Reportable to PADEP?
 Yes
 PWSID #
 *EDDS: Format Typo





301 Fulling Mill Road
Middletown, PA 17057

P: (717) 944-5541

F: (717) 944-1430

Condition of Sample Receipt Form

Client: CCSWMA Work Order #: 3053286 Initials: lw Date: 8/22/19

- | | | | |
|--|-------------|------------|-----------|
| 1. Were airbills / tracking numbers present and recorded?..... | <u>NOPE</u> | YES | NO |
| Tracking number: _____ | | | |
| 2. Are Custody Seals on shipping containers intact?..... | <u>NOPE</u> | YES | NO |
| 3. Are Custody Seals on sample containers intact?..... | <u>NOPE</u> | YES | NO |
| 4. Is there a COC (Chain-of-Custody) present?..... | | <u>YES</u> | NO |
| 5. Are the COC and bottle labels complete, legible and in agreement?..... | | <u>YES</u> | NO |
| 5a. Does the COC contain sample locations?..... | | <u>YES</u> | NO |
| 5b. Does the COC contain date and time of sample collection for all samples?..... | | <u>YES</u> | NO |
| 5c. Does the COC contain sample collectors name?..... | | <u>YES</u> | NO |
| 5d. Does the COC note the type(s) of preservation for all bottles?..... | | <u>YES</u> | NO |
| 5e. Does the COC note the number of bottles submitted for each sample?..... | | <u>YES</u> | NO |
| 5f. Does the COC note the type of sample, composite or grab?..... | | <u>YES</u> | NO |
| 5g. Does the COC note the matrix of the sample(s)?..... | | <u>YES</u> | NO |
| 6. Are all aqueous samples requiring preservation preserved correctly? | N/A | <u>YES</u> | NO |
| 7. Were all samples placed in the proper containers for the requested analyses, with sufficient volume?..... | | <u>YES</u> | NO |
| 8. Are all samples within holding times for the requested analyses?..... | | <u>YES</u> | NO |
| 9. Were all sample containers received intact and headspace free when required? (not broken, leaking, frozen, etc.)..... | | <u>YES</u> | NO |
| 10. Did we receive trip blanks (applies only for methods EPA 504, EPA 524.2 and 1631E (LL Hg)?..... | <u>N/A</u> | YES | NO |
| 11. Were the samples received on ice?..... | | <u>YES</u> | NO |
| 12. Were sample temperatures measured at 0.0-6.0°C..... | | YES | <u>NO</u> |
| 13. Are the samples DW matrix ? If YES, fill out Reportable Drinking Water questions below..... | | YES | <u>NO</u> |
| 13a. Are the samples required for SDWA compliance reporting?..... | N/A | YES | NO |
| 13b. Did the client provide a SDWA PWS ID#?..... | N/A | YES | NO |
| 13c. Are all aqueous unpreserved SDWA samples pH 5-9?..... | N/A | YES | NO |
| 13d. Did the client provide the SDWA sample location ID/Description?..... | N/A | YES | NO |
| 13e. Did the client provide the SDWA sample type (D, E, R, C, P, S)?..... | N/A | YES | NO |

Cooler #: 1

Temperature (°C): 7

Thermometer ID: 318

Radiological (µCi): _____

COMMENTS (Required for all NO responses above and any sample non-conformance):

Tic - same day.

August 30, 2019

Mr. Daniel Brown
Lancaster County Solid Waste Authority
1299 Hbg Pike, P.O. Box 4425
Lancaster, PA 17604

Certificate of Analysis

Project Name:	FREY FARM	Workorder:	3052609
Purchase Order:	PO1000126	Workorder ID:	3rd QTR 2019 GWMP-FORM 19Q

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Monday, August 19, 2019.

The ALS Environmental laboratory in Middletown, Pennsylvania is a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory and as such, certifies that all applicable test results meet the requirements of NELAP.

If you have any questions regarding this certificate of analysis, please contact Ms. Susan J Scherer (Project Coordinator) at (717) 944-5541.

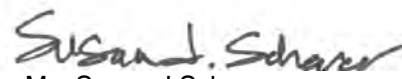
Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications section of the ALS website at www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads.

This laboratory report may not be reproduced, except in full, without the written approval of ALS Environmental.

ALS Spring City: 10 Riverside Drive, Spring City, PA 19475 610-948-4903

CC: Mr. Nicholas Rogers , Ms. Jordan Gallagher , Mr. Jeff Musser

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.


Ms. Susan J Scherer
Project Coordinator

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SAMPLE SUMMARY

Workorder: 3052609 3rd QTR 2019 GWMP-FORM 19Q

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
3052609001	FFMP015W	Ground Water	8/19/2019 10:58	8/19/2019 16:02	Mr. Brian G Shade
3052609002	FFMP03AW	Ground Water	8/19/2019 12:11	8/19/2019 16:02	Mr. Brian G Shade
3052609003	FFMP30RW	Ground Water	8/19/2019 13:41	8/19/2019 16:02	Mr. Brian G Shade
3052609004	FFMP04AW	Ground Water	8/19/2019 14:49	8/19/2019 16:02	Mr. Brian G Shade
3052609005	FIELD BLANK	Water	8/19/2019 15:01	8/19/2019 16:02	Mr. Brian G Shade
3052609006	TRIP BLANK	Water	8/19/2019 16:02	8/19/2019 16:02	Mr. Brian G Shade

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SAMPLE SUMMARY

Workorder: 3052609 3rd QTR 2019 GWMP-FORM 19Q

Notes

- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 - Field Services Sampling Plan).
- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
- The Chain of Custody document is included as part of this report.
- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are performed in the laboratory and are therefore analyzed out of hold time.
- Method references listed on this report beginning with the prefix "S" followed by a method number (such as S2310B-97) refer to methods from "Standard Methods for the Examination of Water and Wastewater".
- For microbiological analyses, the "Prepared" value is the date/time into the incubator and the "Analyzed" value is the date/time out the incubator.
- An Analysis-Prep Method Cross Reference Table is included after Analytical Results & Qualifiers section in this report.

Standard Acronyms/Flags

J	Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
U	Indicates that the analyte was Not Detected (ND)
N	Indicates presumptive evidence of the presence of a compound
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RDL	Reporting Detection Limit
ND	Not Detected - indicates that the analyte was Not Detected at the RDL
Cntr	Analysis was performed using this container
RegLmt	Regulatory Limit
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
%Rec	Percent Recovery
RPD	Relative Percent Difference
LOD	DoD Limit of Detection
LOQ	DoD Limit of Quantitation
DL	DoD Detection Limit
I	Indicates reported value is greater than or equal to the Method Detection Limit (MDL) but less than the Report Detection Limit (RDL)
(S)	Surrogate Compound
NC	Not Calculated
*	Result outside of QC limits

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ANALYTICAL RESULTS

Workorder: 3052609 3rd QTR 2019 GWMP-FORM 19Q

 Lab ID: **3052609001**

Date Collected: 8/19/2019 10:58

Matrix: Ground Water

 Sample ID: **FFMP015W**

Date Received: 8/19/2019 16:02

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			8/24/19 02:44	PDK	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			8/24/19 02:44	PDK	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/24/19 02:44	PDK	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/24/19 02:44	PDK	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/24/19 02:44	PDK	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/24/19 02:44	PDK	G
trans-1,2-Dichloroethene	ND	2	ug/L	1.0	SW846 8260B			8/24/19 02:44	PDK	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			8/24/19 02:44	PDK	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			8/24/19 02:44	PDK	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			8/24/19 02:44	PDK	G
Toluene	ND		ug/L	1.0	SW846 8260B			8/24/19 02:44	PDK	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			8/24/19 02:44	PDK	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			8/24/19 02:44	PDK	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			8/24/19 02:44	PDK	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			8/24/19 02:44	PDK	G
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	103		%	62 - 133	SW846 8260B			8/24/19 02:44	PDK	G
4-Bromofluorobenzene (S)	108		%	79 - 114	SW846 8260B			8/24/19 02:44	PDK	G
Dibromofluoromethane (S)	99.8		%	78 - 116	SW846 8260B			8/24/19 02:44	PDK	G
Toluene-d8 (S)	102		%	76 - 127	SW846 8260B			8/24/19 02:44	PDK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	21		mg/L	5	SM2320B-2011			8/23/19 01:15	MBW	B
Alkalinity, Total	21	3	mg/L	5	SM2320B-2011			8/23/19 01:15	MBW	B
Ammonia-N	ND		mg/L	0.100	D6919-09			8/23/19 21:21	AK	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			8/26/19 14:55	AK	A
Chloride	12.0		mg/L	2.0	EPA 300.0			8/20/19 08:15	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			8/20/19 08:15	CHW	B
Nitrate-N	10.1		mg/L	0.20	EPA 300.0			8/20/19 08:15	CHW	B
pH	6.46	1	pH_Units		S4500HB-11			8/23/19 01:15	MBW	B
Phenolics	ND		mg/L	0.005	SW846 9066	8/23/19 14:18	C_D	8/26/19 05:46	C_D	F
Specific Conductance	234		umhos/cm	1	SW846 9050A			8/23/19 01:15	MBW	B
Sulfate	45.9		mg/L	2.0	EPA 300.0			8/20/19 08:15	CHW	B
Total Dissolved Solids	172		mg/L	5	S2540C-11			8/23/19 15:20	D1C	B
Total Organic Carbon (TOC)	0.93		mg/L	0.50	SW846 9060A			8/28/19 12:39	PAG	D
Turbidity	0.15		NTU	0.10	SM2130B-2011			8/20/19 06:53	R2B	B

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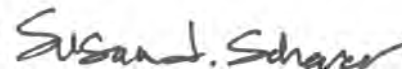
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ANALYTICAL RESULTS

Workorder: 3052609 3rd QTR 2019 GWMP-FORM 19Q

Lab ID: **3052609001** Date Collected: 8/19/2019 10:58 Matrix: Ground Water
 Sample ID: **FFMP015W** Date Received: 8/19/2019 16:02

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	9.3		mg/L	0.11	SW846 6010C	8/23/19 15:45	SXC	8/26/19 13:05	SRT	J
Iron, Total	ND		mg/L	0.067	SW846 6010C	8/23/19 15:45	SXC	8/26/19 13:05	SRT	J
Magnesium, Total	9.8		mg/L	0.11	SW846 6010C	8/23/19 15:45	SXC	8/26/19 13:05	SRT	J
Manganese, Total	0.041		mg/L	0.0056	SW846 6010C	8/23/19 15:45	SXC	8/26/19 13:05	SRT	J
Potassium, Total	2.2		mg/L	0.56	SW846 6010C	8/23/19 15:45	SXC	8/26/19 13:05	SRT	J
Sodium, Total	22.6		mg/L	0.56	SW846 6010C	8/23/19 15:45	SXC	8/26/19 13:05	SRT	J
FIELD PARAMETERS										
Depth to Water Level	56.93		Feet		Field			8/19/19 10:58	BGS	C
Elev Top MW Casing above MSL	576.40		Feet		Field			8/19/19 10:58	BGS	C
Flow Rate	2.15		gal/min		Field			8/19/19 10:58	BGS	C
Ground Water Elevation	519.47		ft/MSL		Field			8/19/19 10:58	BGS	C
pH, Field (SM4500B)	5.04		pH_Units		Field			8/19/19 10:58	BGS	C
Sample Depth	135.00		Feet		Field			8/19/19 10:58	BGS	C
Specific Conductance, Field	269		umhos/cm	1	Field			8/19/19 10:58	BGS	C
Temperature	11.41		Deg. C		Field			8/19/19 10:58	BGS	C
Total Well Depth	149.90		Feet		Field			8/19/19 10:58	BGS	C
Volume in Water Column	136.67		Gallons		Field			8/19/19 10:58	BGS	C
Water Level After Purge	94.00		Feet		Field			8/19/19 10:58	BGS	C
Well Volumes Purged	1.01		Vol		Field			8/19/19 10:58	BGS	C



Ms. Susan J Scherer
 Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3052609 3rd QTR 2019 GWMP-FORM 19Q

 Lab ID: **3052609002**

Date Collected: 8/19/2019 12:11

Matrix: Ground Water

 Sample ID: **FFMP03AW**

Date Received: 8/19/2019 16:02

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			8/24/19 03:07	PDK	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			8/24/19 03:07	PDK	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/24/19 03:07	PDK	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/24/19 03:07	PDK	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/24/19 03:07	PDK	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/24/19 03:07	PDK	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/24/19 03:07	PDK	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			8/24/19 03:07	PDK	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			8/24/19 03:07	PDK	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			8/24/19 03:07	PDK	G
Toluene	ND		ug/L	1.0	SW846 8260B			8/24/19 03:07	PDK	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			8/24/19 03:07	PDK	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			8/24/19 03:07	PDK	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			8/24/19 03:07	PDK	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			8/24/19 03:07	PDK	G
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	104		%	62 - 133	SW846 8260B			8/24/19 03:07	PDK	G
4-Bromofluorobenzene (S)	110		%	79 - 114	SW846 8260B			8/24/19 03:07	PDK	G
Dibromofluoromethane (S)	96.7		%	78 - 116	SW846 8260B			8/24/19 03:07	PDK	G
Toluene-d8 (S)	105		%	76 - 127	SW846 8260B			8/24/19 03:07	PDK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	21		mg/L	5	SM2320B-2011			8/23/19 01:56	MBW	B
Alkalinity, Total	21	2	mg/L	5	SM2320B-2011			8/23/19 01:56	MBW	B
Ammonia-N	ND		mg/L	0.100	D6919-09			8/23/19 07:50	AK	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			8/26/19 14:55	AK	A
Chloride	27.5		mg/L	2.0	EPA 300.0			8/20/19 08:32	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			8/20/19 08:32	CHW	B
Nitrate-N	20.0		mg/L	0.20	EPA 300.0			8/20/19 08:32	CHW	B
pH	6.08	1	pH_Units		S4500HB-11			8/23/19 01:56	MBW	B
Phenolics	ND		mg/L	0.005	SW846 9066	8/23/19 14:18	C_D	8/26/19 05:46	C_D	F
Specific Conductance	254		umhos/cm	1	SW846 9050A			8/23/19 01:56	MBW	B
Sulfate	2.8		mg/L	2.0	EPA 300.0			8/20/19 08:32	CHW	B
Total Dissolved Solids	209		mg/L	5	S2540C-11			8/23/19 15:20	D1C	B
Total Organic Carbon (TOC)	0.56		mg/L	0.50	SW846 9060A			8/28/19 12:39	PAG	D
Turbidity	0.16		NTU	0.10	SM2130B-2011			8/20/19 06:53	R2B	B

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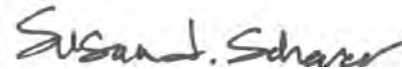
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ANALYTICAL RESULTS

Workorder: 3052609 3rd QTR 2019 GWMP-FORM 19Q

Lab ID: **3052609002** Date Collected: 8/19/2019 12:11 Matrix: Ground Water
Sample ID: **FFMP03AW** Date Received: 8/19/2019 16:02

Parameters	Results	Flag	Units	RDL	Method	Prepared By	Analyzed	By	Cntr
METALS									
Calcium, Total	17.0		mg/L	0.11	SW846 6010C	8/23/19 15:45 SXC	8/26/19 13:17	SRT	J
Iron, Total	ND		mg/L	0.067	SW846 6010C	8/23/19 15:45 SXC	8/26/19 13:17	SRT	J
Magnesium, Total	11.0		mg/L	0.11	SW846 6010C	8/23/19 15:45 SXC	8/26/19 13:17	SRT	J
Manganese, Total	0.26		mg/L	0.0056	SW846 6010C	8/23/19 15:45 SXC	8/26/19 13:17	SRT	J
Potassium, Total	1.4		mg/L	0.56	SW846 6010C	8/23/19 15:45 SXC	8/26/19 13:17	SRT	J
Sodium, Total	12.4		mg/L	0.56	SW846 6010C	8/23/19 15:45 SXC	8/26/19 13:17	SRT	J
FIELD PARAMETERS									
Depth to Water Level	50.14		Feet		Field		8/19/19 12:11	BGS	C
Elev Top MW Casing above MSL	590.90		Feet		Field		8/19/19 12:11	BGS	C
Flow Rate	2.04		gal/min		Field		8/19/19 12:11	BGS	C
Ground Water Elevation	540.76		ft/MSL		Field		8/19/19 12:11	BGS	C
pH, Field (SM4500B)	3.92		pH_Units		Field		8/19/19 12:11	BGS	C
Sample Depth	130.00		Feet		Field		8/19/19 12:11	BGS	C
Specific Conductance, Field	287		umhos/cm	1	Field		8/19/19 12:11	BGS	C
Temperature	11.70		Deg. C		Field		8/19/19 12:11	BGS	C
Total Well Depth	148.40		Feet		Field		8/19/19 12:11	BGS	C
Volume in Water Column	144.44		Gallons		Field		8/19/19 12:11	BGS	C
Water Level After Purge	87.44		Feet		Field		8/19/19 12:11	BGS	C
Well Volumes Purged	0.85		Vol		Field		8/19/19 12:11	BGS	C



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ANALYTICAL RESULTS

Workorder: 3052609 3rd QTR 2019 GWMP-FORM 19Q

 Lab ID: **3052609003** Date Collected: 8/19/2019 13:41 Matrix: Ground Water
 Sample ID: **FFMP30RW** Date Received: 8/19/2019 16:02

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			8/24/19 03:30	PDK	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			8/24/19 03:30	PDK	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/24/19 03:30	PDK	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/24/19 03:30	PDK	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/24/19 03:30	PDK	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/24/19 03:30	PDK	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/24/19 03:30	PDK	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			8/24/19 03:30	PDK	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			8/24/19 03:30	PDK	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			8/24/19 03:30	PDK	G
Toluene	ND		ug/L	1.0	SW846 8260B			8/24/19 03:30	PDK	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			8/24/19 03:30	PDK	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			8/24/19 03:30	PDK	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			8/24/19 03:30	PDK	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			8/24/19 03:30	PDK	G
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	105		%	62 - 133	SW846 8260B			8/24/19 03:30	PDK	G
4-Bromofluorobenzene (S)	108		%	79 - 114	SW846 8260B			8/24/19 03:30	PDK	G
Dibromofluoromethane (S)	99		%	78 - 116	SW846 8260B			8/24/19 03:30	PDK	G
Toluene-d8 (S)	101		%	76 - 127	SW846 8260B			8/24/19 03:30	PDK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	34		mg/L	5	SM2320B-2011			8/23/19 02:04	MBW	B
Alkalinity, Total	34	2	mg/L	5	SM2320B-2011			8/23/19 02:04	MBW	B
Ammonia-N	0.135		mg/L	0.100	D6919-09			8/23/19 13:58	AK	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			8/26/19 14:55	AK	A
Chloride	219		mg/L	5.0	EPA 300.0			8/22/19 06:33	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			8/20/19 10:12	CHW	B
Nitrate-N	5.8		mg/L	0.20	EPA 300.0			8/20/19 10:12	CHW	B
pH	6.36	1	pH_Units		S4500HB-11			8/23/19 02:04	MBW	B
Phenolics	ND		mg/L	0.005	SW846 9066	8/23/19 14:18	C_D	8/26/19 05:46	C_D	F
Specific Conductance	915		umhos/cm	1	SW846 9050A			8/23/19 02:04	MBW	B
Sulfate	26.9		mg/L	2.0	EPA 300.0			8/20/19 10:12	CHW	B
Total Dissolved Solids	542		mg/L	5	S2540C-11			8/23/19 15:20	D1C	B
Total Organic Carbon (TOC)	0.89		mg/L	0.50	SW846 9060A			8/28/19 12:39	PAG	D
Turbidity	1.98		NTU	0.10	SM2130B-2011			8/20/19 06:53	R2B	B

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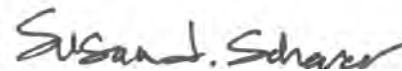
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ANALYTICAL RESULTS

Workorder: 3052609 3rd QTR 2019 GWMP-FORM 19Q

Lab ID: **3052609003** Date Collected: 8/19/2019 13:41 Matrix: Ground Water
Sample ID: **FFMP30RW** Date Received: 8/19/2019 16:02

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	37.6		mg/L	0.11	SW846 6010C	8/23/19 15:45	SXC	8/26/19 13:21	SRT	J
Iron, Total	0.077		mg/L	0.067	SW846 6010C	8/23/19 15:45	SXC	8/26/19 13:21	SRT	J
Magnesium, Total	14.9		mg/L	0.11	SW846 6010C	8/23/19 15:45	SXC	8/26/19 13:21	SRT	J
Manganese, Total	2.6		mg/L	0.0056	SW846 6010C	8/23/19 15:45	SXC	8/26/19 13:21	SRT	J
Potassium, Total	5.3		mg/L	0.56	SW846 6010C	8/23/19 15:45	SXC	8/26/19 13:21	SRT	J
Sodium, Total	110		mg/L	0.56	SW846 6010C	8/23/19 15:45	SXC	8/26/19 13:21	SRT	J
FIELD PARAMETERS										
Depth to Water Level	36.31		Feet		Field			8/19/19 13:41	BGS	C
Elev Top MW Casing above MSL	562.30		Feet		Field			8/19/19 13:41	BGS	C
Flow Rate	2.04		gal/min		Field			8/19/19 13:41	BGS	C
Ground Water Elevation	525.99		ft/MSL		Field			8/19/19 13:41	BGS	C
pH, Field (SM4500B)	4.69		pH_Units		Field			8/19/19 13:41	BGS	C
Sample Depth	85.00		Feet		Field			8/19/19 13:41	BGS	C
Specific Conductance, Field	899		umhos/cm	1	Field			8/19/19 13:41	BGS	C
Temperature	11.24		Deg. C		Field			8/19/19 13:41	BGS	C
Total Well Depth	94.20		Feet		Field			8/19/19 13:41	BGS	C
Volume in Water Column	85.10		Gallons		Field			8/19/19 13:41	BGS	C
Water Level After Purge	61.89		Feet		Field			8/19/19 13:41	BGS	C
Well Volumes Purged	1.44		Vol		Field			8/19/19 13:41	BGS	C



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ANALYTICAL RESULTS

Workorder: 3052609 3rd QTR 2019 GWMP-FORM 19Q

Lab ID: **3052609004** Date Collected: 8/19/2019 14:49 Matrix: Ground Water
Sample ID: **FFMP04AW** Date Received: 8/19/2019 16:02

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			8/24/19 03:53	PDK	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			8/24/19 03:53	PDK	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/24/19 03:53	PDK	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/24/19 03:53	PDK	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/24/19 03:53	PDK	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/24/19 03:53	PDK	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/24/19 03:53	PDK	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			8/24/19 03:53	PDK	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			8/24/19 03:53	PDK	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			8/24/19 03:53	PDK	G
Toluene	ND		ug/L	1.0	SW846 8260B			8/24/19 03:53	PDK	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			8/24/19 03:53	PDK	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			8/24/19 03:53	PDK	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			8/24/19 03:53	PDK	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			8/24/19 03:53	PDK	G
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	102		%	62 - 133	SW846 8260B			8/24/19 03:53	PDK	G
4-Bromofluorobenzene (S)	107		%	79 - 114	SW846 8260B			8/24/19 03:53	PDK	G
Dibromofluoromethane (S)	100		%	78 - 116	SW846 8260B			8/24/19 03:53	PDK	G
Toluene-d8 (S)	101		%	76 - 127	SW846 8260B			8/24/19 03:53	PDK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	221		mg/L	5	SM2320B-2011			8/23/19 02:14	MBW	B
Alkalinity, Total	221	2	mg/L	5	SM2320B-2011			8/23/19 02:14	MBW	B
Ammonia-N	ND		mg/L	0.100	D6919-09			8/23/19 12:00	AK	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			8/26/19 14:55	AK	A
Chloride	317		mg/L	5.0	EPA 300.0			8/22/19 06:49	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			8/20/19 10:28	CHW	B
Nitrate-N	0.24		mg/L	0.20	EPA 300.0			8/20/19 10:28	CHW	B
pH	7.70	1	pH_Units		S4500HB-11			8/23/19 02:14	MBW	B
Phenolics	ND		mg/L	0.005	SW846 9066	8/23/19 14:18	C_D	8/26/19 05:46	C_D	F
Specific Conductance	1430		umhos/cm	1	SW846 9050A			8/23/19 02:14	MBW	B
Sulfate	46.9		mg/L	2.0	EPA 300.0			8/20/19 10:28	CHW	B
Total Dissolved Solids	1030		mg/L	5	S2540C-11			8/23/19 15:20	D1C	B
Total Organic Carbon (TOC)	0.89		mg/L	0.50	SW846 9060A			8/28/19 12:39	PAG	D
Turbidity	1.40		NTU	0.10	SM2130B-2011			8/20/19 06:53	R2B	B

ALS Environmental Laboratory Locations Across North America

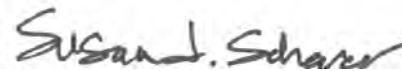
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ANALYTICAL RESULTS

Workorder: 3052609 3rd QTR 2019 GWMP-FORM 19Q

Lab ID: **3052609004** Date Collected: 8/19/2019 14:49 Matrix: Ground Water
 Sample ID: **FFMP04AW** Date Received: 8/19/2019 16:02

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	152		mg/L	0.11	SW846 6010C	8/23/19 15:45	SXC	8/26/19 13:24	SRT	J
Iron, Total	ND		mg/L	0.067	SW846 6010C	8/23/19 15:45	SXC	8/26/19 13:24	SRT	J
Magnesium, Total	23.5		mg/L	0.11	SW846 6010C	8/23/19 15:45	SXC	8/26/19 13:24	SRT	J
Manganese, Total	0.31		mg/L	0.0056	SW846 6010C	8/23/19 15:45	SXC	8/26/19 13:24	SRT	J
Potassium, Total	2.3		mg/L	0.56	SW846 6010C	8/23/19 15:45	SXC	8/26/19 13:24	SRT	J
Sodium, Total	90.8		mg/L	0.56	SW846 6010C	8/23/19 15:45	SXC	8/26/19 13:24	SRT	J
FIELD PARAMETERS										
Depth to Water Level	35.66		Feet		Field			8/19/19 14:49	BGS	C
Elev Top MW Casing above MSL	560.72		Feet		Field			8/19/19 14:49	BGS	C
Flow Rate	2.12		gal/min		Field			8/19/19 14:49	BGS	C
Ground Water Elevation	525.06		ft/MSL		Field			8/19/19 14:49	BGS	C
pH, Field (SM4500B)	6.33		pH_Units		Field			8/19/19 14:49	BGS	C
Sample Depth	146.00		Feet		Field			8/19/19 14:49	BGS	C
Specific Conductance, Field	1451		umhos/cm	1	Field			8/19/19 14:49	BGS	C
Temperature	12.22		Deg. C		Field			8/19/19 14:49	BGS	C
Total Well Depth	148.50		Feet		Field			8/19/19 14:49	BGS	C
Volume in Water Column	165.87		Gallons		Field			8/19/19 14:49	BGS	C
Water Level After Purge	78.60		Feet		Field			8/19/19 14:49	BGS	C
Well Volumes Purged	0.77		Vol		Field			8/19/19 14:49	BGS	C



Ms. Susan J Scherer
 Project Coordinator

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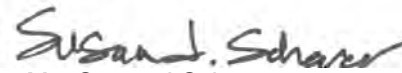
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ANALYTICAL RESULTS

Workorder: 3052609 3rd QTR 2019 GWMP-FORM 19Q

Lab ID: **3052609005** Date Collected: 8/19/2019 15:01 Matrix: Water
Sample ID: **FIELD BLANK** Date Received: 8/19/2019 16:02

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			8/24/19 00:01	PDK	A
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			8/24/19 00:01	PDK	A
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/24/19 00:01	PDK	A
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/24/19 00:01	PDK	A
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/24/19 00:01	PDK	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/24/19 00:01	PDK	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/24/19 00:01	PDK	A
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			8/24/19 00:01	PDK	A
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			8/24/19 00:01	PDK	A
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			8/24/19 00:01	PDK	A
Toluene	ND		ug/L	1.0	SW846 8260B			8/24/19 00:01	PDK	A
Total Xylenes	ND		ug/L	3.0	SW846 8260B			8/24/19 00:01	PDK	A
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			8/24/19 00:01	PDK	A
Trichloroethene	ND		ug/L	1.0	SW846 8260B			8/24/19 00:01	PDK	A
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			8/24/19 00:01	PDK	A
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	100		%	62 - 133	SW846 8260B			8/24/19 00:01	PDK	A
4-Bromofluorobenzene (S)	105		%	79 - 114	SW846 8260B			8/24/19 00:01	PDK	A
Dibromofluoromethane (S)	97.6		%	78 - 116	SW846 8260B			8/24/19 00:01	PDK	A
Toluene-d8 (S)	101		%	76 - 127	SW846 8260B			8/24/19 00:01	PDK	A



Ms. Susan J Scherer
Project Coordinator

ALS Environmental Laboratory Locations Across North America

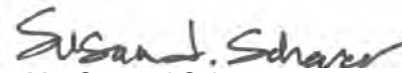
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ANALYTICAL RESULTS

Workorder: 3052609 3rd QTR 2019 GWMP-FORM 19Q

Lab ID: **3052609006** Date Collected: 8/19/2019 16:02 Matrix: Water
Sample ID: **TRIP BLANK** Date Received: 8/19/2019 16:02

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			8/24/19 00:47	PDK	A
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			8/24/19 00:47	PDK	A
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/24/19 00:47	PDK	A
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/24/19 00:47	PDK	A
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/24/19 00:47	PDK	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/24/19 00:47	PDK	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/24/19 00:47	PDK	A
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			8/24/19 00:47	PDK	A
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			8/24/19 00:47	PDK	A
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			8/24/19 00:47	PDK	A
Toluene	ND		ug/L	1.0	SW846 8260B			8/24/19 00:47	PDK	A
Total Xylenes	ND		ug/L	3.0	SW846 8260B			8/24/19 00:47	PDK	A
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			8/24/19 00:47	PDK	A
Trichloroethene	ND		ug/L	1.0	SW846 8260B			8/24/19 00:47	PDK	A
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			8/24/19 00:47	PDK	A
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	103		%	62 - 133	SW846 8260B			8/24/19 00:47	PDK	A
4-Bromofluorobenzene (S)	111		%	79 - 114	SW846 8260B			8/24/19 00:47	PDK	A
Dibromofluoromethane (S)	100		%	78 - 116	SW846 8260B			8/24/19 00:47	PDK	A
Toluene-d8 (S)	101		%	76 - 127	SW846 8260B			8/24/19 00:47	PDK	A



Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3052609 3rd QTR 2019 GWMP-FORM 19Q

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
3052609001	1	FFMP015W	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
3052609001	2	FFMP015W	SW846 8260B	trans-1,2-Dichloroethene
The QC sample type MS for method SW846 8260B was outside the control limits for the analyte trans-1,2-Dichloroethene. The % Recovery was reported as 123 and the control limits were 71 to 122.				
3052609001	3	FFMP015W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3052609002	1	FFMP03AW	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
3052609002	2	FFMP03AW	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3052609003	1	FFMP30RW	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
3052609003	2	FFMP30RW	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3052609004	1	FFMP04AW	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
3052609004	2	FFMP04AW	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				

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ANALYSIS - PREP METHOD CROSS REFERENCE TABLE

Workorder: 3052609 3rd QTR 2019 GWMP-FORM 19Q

Lab ID	Sample ID	Analysis Method	Prep Method
3052609001	FFMP015W	D6919-09	
3052609001	FFMP015W	EPA 300.0	
3052609001	FFMP015W	EPA 410.4	
3052609001	FFMP015W	Field	
3052609001	FFMP015W	S2540C-11	
3052609001	FFMP015W	S4500HB-11	
3052609001	FFMP015W	SM2130B-2011	
3052609001	FFMP015W	SM2320B-2011	
3052609001	FFMP015W	SW846 6010C	SW846 3015
3052609001	FFMP015W	SW846 8260B	
3052609001	FFMP015W	SW846 9050A	
3052609001	FFMP015W	SW846 9060A	
3052609001	FFMP015W	SW846 9066	420.4/9066
3052609002	FFMP03AW	D6919-09	
3052609002	FFMP03AW	EPA 300.0	
3052609002	FFMP03AW	EPA 410.4	
3052609002	FFMP03AW	Field	
3052609002	FFMP03AW	S2540C-11	
3052609002	FFMP03AW	S4500HB-11	
3052609002	FFMP03AW	SM2130B-2011	
3052609002	FFMP03AW	SM2320B-2011	
3052609002	FFMP03AW	SW846 6010C	SW846 3015
3052609002	FFMP03AW	SW846 8260B	
3052609002	FFMP03AW	SW846 9050A	
3052609002	FFMP03AW	SW846 9060A	
3052609002	FFMP03AW	SW846 9066	420.4/9066
3052609003	FFMP30RW	D6919-09	
3052609003	FFMP30RW	EPA 300.0	
3052609003	FFMP30RW	EPA 410.4	
3052609003	FFMP30RW	Field	
3052609003	FFMP30RW	S2540C-11	
3052609003	FFMP30RW	S4500HB-11	
3052609003	FFMP30RW	SM2130B-2011	
3052609003	FFMP30RW	SM2320B-2011	
3052609003	FFMP30RW	SW846 6010C	SW846 3015
3052609003	FFMP30RW	SW846 8260B	
3052609003	FFMP30RW	SW846 9050A	
3052609003	FFMP30RW	SW846 9060A	
3052609003	FFMP30RW	SW846 9066	420.4/9066
3052609004	FFMP04AW	D6919-09	
3052609004	FFMP04AW	EPA 300.0	
3052609004	FFMP04AW	EPA 410.4	
3052609004	FFMP04AW	Field	
3052609004	FFMP04AW	S2540C-11	
3052609004	FFMP04AW	S4500HB-11	
3052609004	FFMP04AW	SM2130B-2011	

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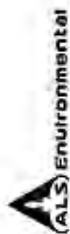
ANALYSIS - PREP METHOD CROSS REFERENCE TABLE

Workorder: 3052609 3rd QTR 2019 GWMP-FORM 19Q

Lab ID	Sample ID	Analysis Method	Prep Method
3052609004	FFMP04AW	SM2320B-2011	
3052609004	FFMP04AW	SW846 6010C	SW846 3015
3052609004	FFMP04AW	SW846 8260B	
3052609004	FFMP04AW	SW846 9050A	
3052609004	FFMP04AW	SW846 9060A	
3052609004	FFMP04AW	SW846 9066	420.4/9066
3052609005	FIELD BLANK	SW846 8260B	
3052609006	TRIP BLANK	SW846 8260B	

ALS Environmental Laboratory Locations Across North America

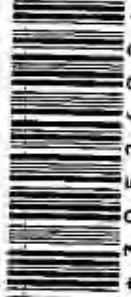
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**CHAIN OF CUSTODY/
REQUEST FOR ANALYSIS**
**ALL SHADED AREAS MUST BE COMPLETED BY THE CLIENT/
SAMPLER. INSTRUCTIONS ON THE BACK.**

Generated by ALS



3 0 5 2 6 0 9 *

led by Receiving Lab)

1 of 1

1

Client Name: Lancaster County Solid Waste MA

Address: 1299 Hamsburg Pike, P.O. Box 4424
Lancaster, PA 17604

Contact: Mark Reider
Phone#: (717) 735-0193

Project Name#: Frey Farm Quarterly (GWMP)
Bill To: Lancaster County Solid Waste MA

TAT Normal-Standard TAT is 10-12 business days.
 Rush-Subject to ALS approval and surcharges.

Date Required: _____ Approved By: _____
Email? Y N mreider@LCSWMA.com
Fax? Y N No: (717) 397-9973

Sample Description/Location
(as it will appear on the lab report)

Sample	Date	Time	Matrix	TOC	O-OH	VOC - Form 190	Field Measurements	Sample Depth for AUX Data	NH3-N, COD	Metals: Fe, Mn, Na, Ca, K, Mg	PH, Cl, SPC, F, SO4, TDS, NO3	Alkalinity Bicarbonate
1. FFMP015W	08/19/19	1058	G GW	2	1	2	X	X	1	1	1	1
2. FFMP03AW	08/19/19	1211	G GW	2	1	2	X	X	1	1	1	1
3. FFMP30RW	08/19/19	1341	G GW	2	1	2	X	X	1	1	1	1
4. FFMP04AW	08/19/19	1449	G GW	2	1	2	X	X	1	1	1	1
5. Field Blank	08/19/19	1501	G GW									
6. Trip Blank	08/19/19	1602	G GW									
7												
8												
9												
10												

Project Comments:
 Relinquished By: ALS Date: 8/19/19 Time: 1602
 Received By / Company Name: [Signature] Date: 8/19/19 Time: 1602

COOLERS: Cooler Temp: 4°C Therm ID: 318
 No. of Coolers: Y N Initial

Custody Seals Present?
 (if present) Seals Intact?
 Received on Ice?
 COCLabels Complete/Accurate?
 Cont. in Good Cond.?
 Correct Containers?
 Correct Sample Volumes?
 Correct Preservation?
 Headspace/Notafiller?

Courier/Tracking #: _____
 Sample/COC Comments

ALS Field Services: Pickup Labor
 Composite Sampling Rental Equipment
 Other:

Special Processing: USACE Navy
 Standard CLP-like USACE

State Samples Collected In: NY NJ PA NC

Reportable to PADEP? Yes No
 Sample Disposal: Lab Special

PWSID #: _____
 - EDDS: Format Type _____

LOGGED BY (signature): _____
 REVIEWED BY (signature): _____

Matrix: Air Drinking Water Groundwater Other Liquid Other Solid Wastewater

ALS ENVIRONMENTAL SHIPPING ADDRESS: 34 DOGWOOD LANE, MIDDLETOWN, PA 17057

Rev 8/04

Friday, August 30, 2019 11:58:28 AM
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301 Fulling Mill Road
 Middletown, PA 17057
 P: (717) 944-5541
 F: (717) 944-1430

Condition of Sample Receipt Form

Client: LCSWMA Work Order #: 3052609 Initials: CD Date: 8/19/19

- | | | | |
|--|-------------|------------|-----------|
| 1. Were airbills / tracking numbers present and recorded?..... | <u>NONE</u> | YES | NO |
| Tracking number: _____ | | | |
| 2. Are Custody Seals on shipping containers intact?..... | <u>NONE</u> | YES | NO |
| 3. Are Custody Seals on sample containers intact?..... | <u>NONE</u> | YES | NO |
| 4. Is there a COC (Chain-of-Custody) present?..... | | <u>YES</u> | NO |
| 5. Are the COC and bottle labels complete, legible and in agreement?..... | | <u>YES</u> | NO |
| 5a. Does the COC contain sample locations?..... | | <u>YES</u> | NO |
| 5b. Does the COC contain date and time of sample collection for all samples?..... | | <u>YES</u> | NO |
| 5c. Does the COC contain sample collectors name?..... | | <u>YES</u> | NO |
| 5d. Does the COC note the type(s) of preservation for all bottles?..... | | <u>YES</u> | NO |
| 5e. Does the COC note the number of bottles submitted for each sample?..... | | <u>YES</u> | NO |
| 5f. Does the COC note the type of sample, composite or grab?..... | | <u>YES</u> | NO |
| 5g. Does the COC note the matrix of the sample(s)?..... | | <u>YES</u> | NO |
| 6. Are all aqueous samples requiring preservation preserved correctly?..... | N/A | <u>YES</u> | NO |
| 7. Were all samples placed in the proper containers for the requested analyses, with sufficient volume?..... | | <u>YES</u> | NO |
| 8. Are all samples within holding times for the requested analyses?..... | | <u>YES</u> | NO |
| 9. Were all sample containers received intact and headspace free when required? (not broken, leaking, frozen, etc.)..... | | <u>YES</u> | NO |
| 10. Did we receive trip blanks (applies only for methods EPA 504, EPA 524.2 and 1631E (LL Hg)?..... | <u>N/A</u> | YES | NO |
| 11. Were the samples received on ice?..... | | <u>YES</u> | NO |
| 12. Were sample temperatures measured at 0.0-6.0°C..... | | <u>YES</u> | NO |
| 13. Are the samples DW matrix ? If YES, fill out Reportable Drinking Water questions below..... | | YES | <u>NO</u> |
| 13a. Are the samples required for SDWA compliance reporting?..... | <u>N/A</u> | YES | NO |
| 13b. Did the client provide a SDWA PWS ID#?..... | <u>N/A</u> | YES | NO |
| 13c. Are all aqueous unpreserved SDWA samples pH 5-9?..... | <u>N/A</u> | YES | NO |
| 13d. Did the client provide the SDWA sample location ID/Description?..... | <u>N/A</u> | YES | NO |
| 13e. Did the client provide the SDWA sample type (D, E, R, C, P, S)?..... | <u>N/A</u> | YES | NO |

Cooler #: _____
 Temperature (°C): 4 _____
 Thermometer ID: 315 _____
 Radiological (µCi): _____

COMMENTS (Required for all NO responses above and any sample non-conformance):

Rev. 4/29/2019



August 30, 2019

Mr. Daniel Brown
Lancaster County Solid Waste Authority
1299 Hbg Pike, P.O. Box 4425
Lancaster, PA 17604

Certificate of Analysis

Project Name:	FREY FARM	Workorder:	3052795
Purchase Order:	PO1000126	Workorder ID:	3rd QTR 2019 GWMP-FORM 19Q

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Tuesday, August 20, 2019.

The ALS Environmental laboratory in Middletown, Pennsylvania is a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory and as such, certifies that all applicable test results meet the requirements of NELAP.

If you have any questions regarding this certificate of analysis, please contact Ms. Susan J Scherer (Project Coordinator) at (717) 944-5541.

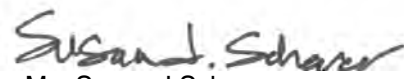
Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications section of the ALS website at www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads.

This laboratory report may not be reproduced, except in full, without the written approval of ALS Environmental.

ALS Spring City: 10 Riverside Drive, Spring City, PA 19475 610-948-4903

CC: Mr. Nicholas Rogers , Ms. Jordan Gallagher , Mr. Jeff Musser

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.


Ms. Susan J Scherer
Project Coordinator

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SAMPLE SUMMARY

Workorder: 3052795 3rd QTR 2019 GWMP-FORM 19Q

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
3052795001	FFMP017W	Ground Water	8/20/2019 09:41	8/20/2019 15:36	Mr. Brian G Shade
3052795002	FFMP018W	Ground Water	8/20/2019 10:26	8/20/2019 15:36	Mr. Brian G Shade
3052795003	FFMP019W	Ground Water	8/20/2019 11:11	8/20/2019 15:36	Mr. Brian G Shade
3052795004	FFMP029W	Ground Water	8/20/2019 12:34	8/20/2019 15:36	Mr. Brian G Shade
3052795005	FFMP005W	Ground Water	8/20/2019 14:25	8/20/2019 15:36	Mr. Brian G Shade

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SAMPLE SUMMARY

Workorder: 3052795 3rd QTR 2019 GWMP-FORM 19Q

Notes

- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 - Field Services Sampling Plan).
- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
- The Chain of Custody document is included as part of this report.
- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are performed in the laboratory and are therefore analyzed out of hold time.
- Method references listed on this report beginning with the prefix "S" followed by a method number (such as S2310B-97) refer to methods from "Standard Methods for the Examination of Water and Wastewater".
- For microbiological analyses, the "Prepared" value is the date/time into the incubator and the "Analyzed" value is the date/time out the incubator.
- An Analysis-Prep Method Cross Reference Table is included after Analytical Results & Qualifiers section in this report.

Standard Acronyms/Flags

J	Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
U	Indicates that the analyte was Not Detected (ND)
N	Indicates presumptive evidence of the presence of a compound
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RDL	Reporting Detection Limit
ND	Not Detected - indicates that the analyte was Not Detected at the RDL
Cntr	Analysis was performed using this container
RegLmt	Regulatory Limit
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
%Rec	Percent Recovery
RPD	Relative Percent Difference
LOD	DoD Limit of Detection
LOQ	DoD Limit of Quantitation
DL	DoD Detection Limit
I	Indicates reported value is greater than or equal to the Method Detection Limit (MDL) but less than the Report Detection Limit (RDL)
(S)	Surrogate Compound
NC	Not Calculated
*	Result outside of QC limits

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ANALYTICAL RESULTS

Workorder: 3052795 3rd QTR 2019 GWMP-FORM 19Q

Lab ID: **3052795001**

Date Collected: 8/20/2019 09:41

Matrix: Ground Water

Sample ID: **FFMP017W**

Date Received: 8/20/2019 15:36

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			8/27/19 18:02	TMP	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			8/27/19 18:02	TMP	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/27/19 18:02	TMP	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/27/19 18:02	TMP	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/27/19 18:02	TMP	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/27/19 18:02	TMP	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/27/19 18:02	TMP	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			8/27/19 18:02	TMP	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			8/27/19 18:02	TMP	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			8/27/19 18:02	TMP	G
Toluene	ND		ug/L	1.0	SW846 8260B			8/27/19 18:02	TMP	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			8/27/19 18:02	TMP	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			8/27/19 18:02	TMP	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			8/27/19 18:02	TMP	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			8/27/19 18:02	TMP	G
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	107		%	62 - 133	SW846 8260B			8/27/19 18:02	TMP	G
4-Bromofluorobenzene (S)	106		%	79 - 114	SW846 8260B			8/27/19 18:02	TMP	G
Dibromofluoromethane (S)	98.7		%	78 - 116	SW846 8260B			8/27/19 18:02	TMP	G
Toluene-d8 (S)	99.1		%	76 - 127	SW846 8260B			8/27/19 18:02	TMP	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	46		mg/L	5	SM2320B-2011			8/23/19 08:12	MBW	B
Alkalinity, Total	46	2	mg/L	5	SM2320B-2011			8/23/19 08:12	MBW	B
Ammonia-N	0.609		mg/L	0.100	D6919-09			8/28/19 11:33	AK	A
Chemical Oxygen Demand (COD)	15		mg/L	15	EPA 410.4			8/26/19 14:55	AK	A
Chloride	405		mg/L	5.0	EPA 300.0			8/21/19 11:15	CHW	B
Fluoride	ND		mg/L	0.50	EPA 300.0			8/21/19 11:15	CHW	B
Nitrate-N	2.0		mg/L	0.50	EPA 300.0			8/21/19 11:15	CHW	B
pH	6.34	1	pH_Units		S4500HB-11			8/23/19 08:12	MBW	B
Phenolics	ND		mg/L	0.005	SW846 9066	8/23/19 14:18	C_D	8/26/19 05:46	C_D	F
Specific Conductance	1520		umhos/cm	1	SW846 9050A			8/23/19 08:12	MBW	B
Sulfate	56.8		mg/L	5.0	EPA 300.0			8/21/19 11:15	CHW	B
Total Dissolved Solids	1140		mg/L	5	S2540C-11			8/26/19 11:36	D1C	B
Total Organic Carbon (TOC)	2.5		mg/L	0.50	SW846 9060A			8/28/19 18:18	PAG	D
Turbidity	4.64		NTU	0.10	SM2130B-2011			8/21/19 07:13	R2B	B

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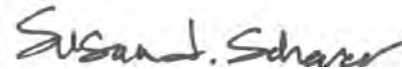
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ANALYTICAL RESULTS

Workorder: 3052795 3rd QTR 2019 GWMP-FORM 19Q

Lab ID: **3052795001** Date Collected: 8/20/2019 09:41 Matrix: Ground Water
Sample ID: **FFMP017W** Date Received: 8/20/2019 15:36

Parameters	Results	Flag	Units	RDL	Method	Prepared By	Analyzed	By	Cntr
METALS									
Calcium, Total	99.1		mg/L	0.11	SW846 6010C	8/23/19 17:30 AHI	8/26/19 14:31	SRT	J1
Iron, Total	0.099		mg/L	0.067	SW846 6010C	8/23/19 17:30 AHI	8/26/19 14:31	SRT	J1
Magnesium, Total	41.2		mg/L	0.11	SW846 6010C	8/23/19 17:30 AHI	8/26/19 14:31	SRT	J1
Manganese, Total	0.49		mg/L	0.0056	SW846 6010C	8/23/19 17:30 AHI	8/26/19 14:31	SRT	J1
Potassium, Total	6.2		mg/L	0.56	SW846 6010C	8/23/19 17:30 AHI	8/26/19 14:31	SRT	J1
Sodium, Total	86.4		mg/L	0.56	SW846 6010C	8/23/19 17:30 AHI	8/26/19 14:31	SRT	J1
FIELD PARAMETERS									
Depth to Water Level	41.04		Feet		Field		8/20/19 09:41	BGS	C
Elev Top MW Casing above MSL	480.70		Feet		Field		8/20/19 09:41	BGS	C
Flow Rate	2.14		gal/min		Field		8/20/19 09:41	BGS	C
Ground Water Elevation	439.66		ft/MSL		Field		8/20/19 09:41	BGS	C
pH, Field (SM4500B)	5.81		pH_Units		Field		8/20/19 09:41	BGS	C
Sample Depth	135.00		Feet		Field		8/20/19 09:41	BGS	C
Specific Conductance, Field	1567		umhos/cm	1	Field		8/20/19 09:41	BGS	C
Temperature	10.30		Deg. C		Field		8/20/19 09:41	BGS	C
Total Well Depth	150.50		Feet		Field		8/20/19 09:41	BGS	C
Volume in Water Column	160.91		Gallons		Field		8/20/19 09:41	BGS	C
Water Level After Purge	47.25		Feet		Field		8/20/19 09:41	BGS	C
Well Volumes Purged	1.00		Vol		Field		8/20/19 09:41	BGS	C



Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3052795 3rd QTR 2019 GWMP-FORM 19Q

 Lab ID: **3052795002** Date Collected: 8/20/2019 10:26 Matrix: Ground Water
 Sample ID: **FFMP018W** Date Received: 8/20/2019 15:36

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			8/27/19 18:25	TMP	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			8/27/19 18:25	TMP	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/27/19 18:25	TMP	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/27/19 18:25	TMP	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/27/19 18:25	TMP	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/27/19 18:25	TMP	G
trans-1,2-Dichloroethene	ND	2	ug/L	1.0	SW846 8260B			8/27/19 18:25	TMP	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			8/27/19 18:25	TMP	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			8/27/19 18:25	TMP	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			8/27/19 18:25	TMP	G
Toluene	ND		ug/L	1.0	SW846 8260B			8/27/19 18:25	TMP	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			8/27/19 18:25	TMP	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			8/27/19 18:25	TMP	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			8/27/19 18:25	TMP	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			8/27/19 18:25	TMP	G
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	107		%	62 - 133	SW846 8260B			8/27/19 18:25	TMP	G
4-Bromofluorobenzene (S)	107		%	79 - 114	SW846 8260B			8/27/19 18:25	TMP	G
Dibromofluoromethane (S)	99.7		%	78 - 116	SW846 8260B			8/27/19 18:25	TMP	G
Toluene-d8 (S)	98.9		%	76 - 127	SW846 8260B			8/27/19 18:25	TMP	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	18		mg/L	5	SM2320B-2011			8/23/19 08:20	MBW	B
Alkalinity, Total	18	3	mg/L	5	SM2320B-2011			8/23/19 08:20	MBW	B
Ammonia-N	0.161		mg/L	0.100	D6919-09			8/28/19 14:44	AK	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			8/26/19 14:55	AK	A
Chloride	106		mg/L	2.0	EPA 300.0			8/21/19 11:32	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			8/21/19 11:32	CHW	B
Nitrate-N	5.7		mg/L	0.20	EPA 300.0			8/21/19 11:32	CHW	B
pH	5.93	1	pH_Units		S4500HB-11			8/23/19 08:20	MBW	B
Phenolics	ND		mg/L	0.005	SW846 9066	8/23/19 14:19	C_D	8/26/19 05:46	C_D	F
Specific Conductance	528		umhos/cm	1	SW846 9050A			8/23/19 08:20	MBW	B
Sulfate	39.4		mg/L	2.0	EPA 300.0			8/21/19 11:32	CHW	B
Total Dissolved Solids	363		mg/L	5	S2540C-11			8/26/19 11:36	D1C	B
Total Organic Carbon (TOC)	0.92		mg/L	0.50	SW846 9060A			8/28/19 18:18	PAG	D
Turbidity	0.15		NTU	0.10	SM2130B-2011			8/21/19 07:13	R2B	B

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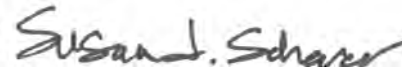
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ANALYTICAL RESULTS

Workorder: 3052795 3rd QTR 2019 GWMP-FORM 19Q

Lab ID: **3052795002** Date Collected: 8/20/2019 10:26 Matrix: Ground Water
 Sample ID: **FFMP018W** Date Received: 8/20/2019 15:36

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	30.5		mg/L	0.11	SW846 6010C	8/22/19 19:30	SXC	8/23/19 14:57	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	8/22/19 19:30	SXC	8/23/19 14:57	SRT	J1
Magnesium, Total	15.7		mg/L	0.11	SW846 6010C	8/22/19 19:30	SXC	8/23/19 14:57	SRT	J1
Manganese, Total	0.36		mg/L	0.0056	SW846 6010C	8/22/19 19:30	SXC	8/23/19 14:57	SRT	J1
Potassium, Total	5.0		mg/L	0.56	SW846 6010C	8/22/19 19:30	SXC	8/23/19 14:57	SRT	J1
Sodium, Total	35.5		mg/L	0.56	SW846 6010C	8/22/19 19:30	SXC	8/23/19 14:57	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	26.73		Feet		Field			8/20/19 10:26	BGS	C
Elev Top MW Casing above MSL	472.20		Feet		Field			8/20/19 10:26	BGS	C
Flow Rate	4.78		gal/min		Field			8/20/19 10:26	BGS	C
Ground Water Elevation	445.47		ft/MSL		Field			8/20/19 10:26	BGS	C
pH, Field (SM4500B)	5.14		pH_Units		Field			8/20/19 10:26	BGS	C
Sample Depth	40.00		Feet		Field			8/20/19 10:26	BGS	C
Specific Conductance, Field	554		umhos/cm	1	Field			8/20/19 10:26	BGS	C
Temperature	13.92		Deg. C		Field			8/20/19 10:26	BGS	C
Total Well Depth	51.46		Feet		Field			8/20/19 10:26	BGS	C
Volume in Water Column	16.07		Gallons		Field			8/20/19 10:26	BGS	C
Water Level After Purge	29.97		Feet		Field			8/20/19 10:26	BGS	C
Well Volumes Purged	0.89		Vol		Field			8/20/19 10:26	BGS	C



Ms. Susan J Scherer
 Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3052795 3rd QTR 2019 GWMP-FORM 19Q

 Lab ID: **3052795003**

Date Collected: 8/20/2019 11:11

Matrix: Ground Water

 Sample ID: **FFMP019W**

Date Received: 8/20/2019 15:36

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			8/27/19 18:47	TMP	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			8/27/19 18:47	TMP	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/27/19 18:47	TMP	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/27/19 18:47	TMP	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/27/19 18:47	TMP	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/27/19 18:47	TMP	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/27/19 18:47	TMP	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			8/27/19 18:47	TMP	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			8/27/19 18:47	TMP	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			8/27/19 18:47	TMP	G
Toluene	ND		ug/L	1.0	SW846 8260B			8/27/19 18:47	TMP	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			8/27/19 18:47	TMP	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			8/27/19 18:47	TMP	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			8/27/19 18:47	TMP	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			8/27/19 18:47	TMP	G
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	107		%	62 - 133	SW846 8260B			8/27/19 18:47	TMP	G
4-Bromofluorobenzene (S)	106		%	79 - 114	SW846 8260B			8/27/19 18:47	TMP	G
Dibromofluoromethane (S)	98.6		%	78 - 116	SW846 8260B			8/27/19 18:47	TMP	G
Toluene-d8 (S)	98.3		%	76 - 127	SW846 8260B			8/27/19 18:47	TMP	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	69		mg/L	5	SM2320B-2011			8/23/19 08:28	MBW	B
Alkalinity, Total	69	2	mg/L	5	SM2320B-2011			8/23/19 08:28	MBW	B
Ammonia-N	0.141		mg/L	0.100	D6919-09			8/28/19 14:57	AK	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			8/26/19 14:55	AK	A
Chloride	75.9		mg/L	2.0	EPA 300.0			8/21/19 11:48	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			8/21/19 11:48	CHW	B
Nitrate-N	0.22		mg/L	0.20	EPA 300.0			8/21/19 11:48	CHW	B
pH	7.03	1	pH_Units		S4500HB-11			8/23/19 08:28	MBW	B
Phenolics	ND		mg/L	0.005	SW846 9066	8/23/19 14:19	C_D	8/26/19 05:46	C_D	F
Specific Conductance	421		umhos/cm	1	SW846 9050A			8/23/19 08:28	MBW	B
Sulfate	14.0		mg/L	2.0	EPA 300.0			8/21/19 11:48	CHW	B
Total Dissolved Solids	308		mg/L	5	S2540C-11			8/26/19 11:36	D1C	B
Total Organic Carbon (TOC)	1.1		mg/L	0.50	SW846 9060A			8/28/19 18:18	PAG	D
Turbidity	0.29		NTU	0.10	SM2130B-2011			8/21/19 07:13	R2B	B

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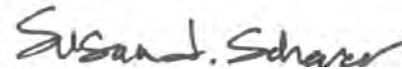
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ANALYTICAL RESULTS

Workorder: 3052795 3rd QTR 2019 GWMP-FORM 19Q

Lab ID: **3052795003** Date Collected: 8/20/2019 11:11 Matrix: Ground Water
Sample ID: **FFMP019W** Date Received: 8/20/2019 15:36

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	56.6		mg/L	0.11	SW846 6010C	8/22/19 19:30	SXC	8/23/19 15:01	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	8/22/19 19:30	SXC	8/23/19 15:01	SRT	J1
Magnesium, Total	5.4		mg/L	0.11	SW846 6010C	8/22/19 19:30	SXC	8/23/19 15:01	SRT	J1
Manganese, Total	ND		mg/L	0.0056	SW846 6010C	8/22/19 19:30	SXC	8/23/19 15:01	SRT	J1
Potassium, Total	0.93		mg/L	0.56	SW846 6010C	8/22/19 19:30	SXC	8/23/19 15:01	SRT	J1
Sodium, Total	10.1		mg/L	0.56	SW846 6010C	8/22/19 19:30	SXC	8/23/19 15:01	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	27.48		Feet		Field			8/20/19 11:11	BGS	C
Elev Top MW Casing above MSL	471.95		Feet		Field			8/20/19 11:11	BGS	C
Flow Rate	4.50		gal/min		Field			8/20/19 11:11	BGS	C
Ground Water Elevation	444.47		ft/MSL		Field			8/20/19 11:11	BGS	C
pH, Field (SM4500B)	5.73		pH_Units		Field			8/20/19 11:11	BGS	C
Sample Depth	49.00		Feet		Field			8/20/19 11:11	BGS	C
Specific Conductance, Field	447		umhos/cm	1	Field			8/20/19 11:11	BGS	C
Temperature	11.36		Deg. C		Field			8/20/19 11:11	BGS	C
Total Well Depth	132.79		Feet		Field			8/20/19 11:11	BGS	C
Volume in Water Column	68.45		Gallons		Field			8/20/19 11:11	BGS	C
Water Level After Purge	36.39		Feet		Field			8/20/19 11:11	BGS	C
Well Volumes Purged	0.99		Vol		Field			8/20/19 11:11	BGS	C



Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3052795 3rd QTR 2019 GWMP-FORM 19Q

 Lab ID: **3052795004** Date Collected: 8/20/2019 12:34 Matrix: Ground Water
 Sample ID: **FFMP029W** Date Received: 8/20/2019 15:36

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			8/27/19 19:10	TMP	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			8/27/19 19:10	TMP	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/27/19 19:10	TMP	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/27/19 19:10	TMP	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/27/19 19:10	TMP	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/27/19 19:10	TMP	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/27/19 19:10	TMP	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			8/27/19 19:10	TMP	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			8/27/19 19:10	TMP	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			8/27/19 19:10	TMP	G
Toluene	ND		ug/L	1.0	SW846 8260B			8/27/19 19:10	TMP	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			8/27/19 19:10	TMP	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			8/27/19 19:10	TMP	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			8/27/19 19:10	TMP	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			8/27/19 19:10	TMP	G
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	106		%	62 - 133	SW846 8260B			8/27/19 19:10	TMP	G
4-Bromofluorobenzene (S)	106		%	79 - 114	SW846 8260B			8/27/19 19:10	TMP	G
Dibromofluoromethane (S)	99.5		%	78 - 116	SW846 8260B			8/27/19 19:10	TMP	G
Toluene-d8 (S)	98.5		%	76 - 127	SW846 8260B			8/27/19 19:10	TMP	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	13		mg/L	5	SM2320B-2011			8/23/19 08:37	MBW	I
Alkalinity, Total	13	2	mg/L	5	SM2320B-2011			8/23/19 08:37	MBW	I
Ammonia-N	0.171		mg/L	0.100	D6919-09			8/28/19 15:10	AK	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			8/26/19 14:55	AK	A
Chloride	50.7		mg/L	2.0	EPA 300.0			8/21/19 12:05	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			8/21/19 12:05	CHW	B
Nitrate-N	3.6		mg/L	0.20	EPA 300.0			8/21/19 12:05	CHW	B
pH	5.89	1	pH_Units		S4500HB-11			8/23/19 08:37	MBW	I
Phenolics	ND		mg/L	0.005	SW846 9066	8/23/19 14:19	C_D	8/26/19 05:46	C_D	F
Specific Conductance	221		umhos/cm	1	SW846 9050A			8/23/19 08:37	MBW	I
Sulfate	4.1		mg/L	2.0	EPA 300.0			8/21/19 12:05	CHW	B
Total Dissolved Solids	193		mg/L	5	S2540C-11			8/26/19 11:36	D1C	B
Total Organic Carbon (TOC)	ND		mg/L	0.50	SW846 9060A			8/28/19 18:18	PAG	D
Turbidity	0.14		NTU	0.10	SM2130B-2011			8/21/19 07:13	R2B	B

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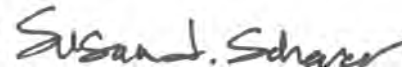
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ANALYTICAL RESULTS

Workorder: 3052795 3rd QTR 2019 GWMP-FORM 19Q

Lab ID: **3052795004** Date Collected: 8/20/2019 12:34 Matrix: Ground Water
Sample ID: **FFMP029W** Date Received: 8/20/2019 15:36

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	11.2		mg/L	0.11	SW846 6010C	8/22/19 19:30	SXC	8/23/19 15:05	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	8/22/19 19:30	SXC	8/23/19 15:05	SRT	J1
Magnesium, Total	8.6		mg/L	0.11	SW846 6010C	8/22/19 19:30	SXC	8/23/19 15:05	SRT	J1
Manganese, Total	0.025		mg/L	0.0056	SW846 6010C	8/22/19 19:30	SXC	8/23/19 15:05	SRT	J1
Potassium, Total	1.8		mg/L	0.56	SW846 6010C	8/22/19 19:30	SXC	8/23/19 15:05	SRT	J1
Sodium, Total	17.0		mg/L	0.56	SW846 6010C	8/22/19 19:30	SXC	8/23/19 15:05	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	38.41		Feet		Field			8/20/19 12:34	BGS	C
Elev Top MW Casing above MSL	477.30		Feet		Field			8/20/19 12:34	BGS	C
Flow Rate	2.50		gal/min		Field			8/20/19 12:34	BGS	C
Ground Water Elevation	438.89		ft/MSL		Field			8/20/19 12:34	BGS	C
pH, Field (SM4500B)	3.94		pH_Units		Field			8/20/19 12:34	BGS	C
Sample Depth	55.00		Feet		Field			8/20/19 12:34	BGS	C
Specific Conductance, Field	261		umhos/cm	1	Field			8/20/19 12:34	BGS	C
Temperature	12.13		Deg. C		Field			8/20/19 12:34	BGS	C
Total Well Depth	60.50		Feet		Field			8/20/19 12:34	BGS	C
Volume in Water Column	32.47		Gallons		Field			8/20/19 12:34	BGS	C
Water Level After Purge	44.59		Feet		Field			8/20/19 12:34	BGS	C
Well Volumes Purged	3.08		Vol		Field			8/20/19 12:34	BGS	C



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ANALYTICAL RESULTS

Workorder: 3052795 3rd QTR 2019 GWMP-FORM 19Q

 Lab ID: **3052795005**

Date Collected: 8/20/2019 14:25

Matrix: Ground Water

 Sample ID: **FFMP005W**

Date Received: 8/20/2019 15:36

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			8/27/19 19:33	TMP	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			8/27/19 19:33	TMP	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/27/19 19:33	TMP	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/27/19 19:33	TMP	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/27/19 19:33	TMP	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/27/19 19:33	TMP	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/27/19 19:33	TMP	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			8/27/19 19:33	TMP	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			8/27/19 19:33	TMP	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			8/27/19 19:33	TMP	G
Toluene	ND		ug/L	1.0	SW846 8260B			8/27/19 19:33	TMP	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			8/27/19 19:33	TMP	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			8/27/19 19:33	TMP	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			8/27/19 19:33	TMP	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			8/27/19 19:33	TMP	G
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	108		%	62 - 133	SW846 8260B			8/27/19 19:33	TMP	G
4-Bromofluorobenzene (S)	106		%	79 - 114	SW846 8260B			8/27/19 19:33	TMP	G
Dibromofluoromethane (S)	99.8		%	78 - 116	SW846 8260B			8/27/19 19:33	TMP	G
Toluene-d8 (S)	97.8		%	76 - 127	SW846 8260B			8/27/19 19:33	TMP	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	52		mg/L	5	SM2320B-2011			8/23/19 08:44	MBW	B
Alkalinity, Total	52	2	mg/L	5	SM2320B-2011			8/23/19 08:44	MBW	B
Ammonia-N	0.133		mg/L	0.100	D6919-09			8/28/19 15:22	AK	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			8/26/19 14:55	AK	A
Chloride	188		mg/L	5.0	EPA 300.0			8/21/19 14:01	CHW	B
Fluoride	ND		mg/L	0.50	EPA 300.0			8/21/19 14:01	CHW	B
Nitrate-N	2.2		mg/L	0.50	EPA 300.0			8/21/19 14:01	CHW	B
pH	6.07	1	pH_Units		S4500HB-11			8/23/19 08:44	MBW	B
Phenolics	ND		mg/L	0.005	SW846 9066	8/23/19 14:19	C_D	8/26/19 05:46	C_D	F
Specific Conductance	888		umhos/cm	1	SW846 9050A			8/23/19 08:44	MBW	B
Sulfate	59.2		mg/L	5.0	EPA 300.0			8/21/19 14:01	CHW	B
Total Dissolved Solids	592		mg/L	5	S2540C-11			8/26/19 11:36	D1C	B
Total Organic Carbon (TOC)	1.3		mg/L	0.50	SW846 9060A			8/29/19 00:27	PAG	D
Turbidity	0.12		NTU	0.10	SM2130B-2011			8/21/19 07:13	R2B	B

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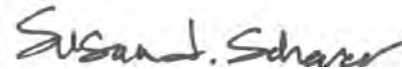
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ANALYTICAL RESULTS

Workorder: 3052795 3rd QTR 2019 GWMP-FORM 19Q

Lab ID: **3052795005** Date Collected: 8/20/2019 14:25 Matrix: Ground Water
 Sample ID: **FFMP005W** Date Received: 8/20/2019 15:36

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	72.2		mg/L	0.11	SW846 6010C	8/23/19 17:30	AHI	8/26/19 14:35	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	8/23/19 17:30	AHI	8/26/19 14:35	SRT	J1
Magnesium, Total	16.6		mg/L	0.11	SW846 6010C	8/23/19 17:30	AHI	8/26/19 14:35	SRT	J1
Manganese, Total	0.080		mg/L	0.0056	SW846 6010C	8/23/19 17:30	AHI	8/26/19 14:35	SRT	J1
Potassium, Total	2.8		mg/L	0.56	SW846 6010C	8/23/19 17:30	AHI	8/26/19 14:35	SRT	J1
Sodium, Total	42.1		mg/L	0.56	SW846 6010C	8/23/19 17:30	AHI	8/26/19 14:35	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	68.45		Feet		Field			8/20/19 14:25	BGS	C
Elev Top MW Casing above MSL	537.40		Feet		Field			8/20/19 14:25	BGS	C
Flow Rate	2.36		gal/min		Field			8/20/19 14:25	BGS	C
Ground Water Elevation	468.95		ft/MSL		Field			8/20/19 14:25	BGS	C
pH, Field (SM4500B)	5.14		pH_Units		Field			8/20/19 14:25	BGS	C
Sample Depth	135.00		Feet		Field			8/20/19 14:25	BGS	C
Specific Conductance, Field	914		umhos/cm	1	Field			8/20/19 14:25	BGS	C
Temperature	10.95		Deg. C		Field			8/20/19 14:25	BGS	C
Total Well Depth	149.70		Feet		Field			8/20/19 14:25	BGS	C
Volume in Water Column	119.44		Gallons		Field			8/20/19 14:25	BGS	C
Water Level After Purge	93.63		Feet		Field			8/20/19 14:25	BGS	C
Well Volumes Purged	1.38		Vol		Field			8/20/19 14:25	BGS	C



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 Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3052795 3rd QTR 2019 GWMP-FORM 19Q

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
3052795001	1	FFMP017W	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
3052795001	2	FFMP017W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
3052795002	1	FFMP018W	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
3052795002	2	FFMP018W	SW846 8260B	trans-1,2-Dichloroethene
The QC sample type MS for method SW846 8260B was outside the control limits for the analyte trans-1,2-Dichloroethene. The % Recovery was reported as 128 and the control limits were 71 to 122.				
3052795002	3	FFMP018W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
3052795003	1	FFMP019W	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
3052795003	2	FFMP019W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
3052795004	1	FFMP029W	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
3052795004	2	FFMP029W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
3052795005	1	FFMP005W	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
3052795005	2	FFMP005W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				

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ANALYSIS - PREP METHOD CROSS REFERENCE TABLE

Workorder: 3052795 3rd QTR 2019 GWMP-FORM 19Q

Lab ID	Sample ID	Analysis Method	Prep Method
3052795001	FFMP017W	D6919-09	
3052795001	FFMP017W	EPA 300.0	
3052795001	FFMP017W	EPA 410.4	
3052795001	FFMP017W	Field	
3052795001	FFMP017W	S2540C-11	
3052795001	FFMP017W	S4500HB-11	
3052795001	FFMP017W	SM2130B-2011	
3052795001	FFMP017W	SM2320B-2011	
3052795001	FFMP017W	SW846 6010C	SW846 3015
3052795001	FFMP017W	SW846 8260B	
3052795001	FFMP017W	SW846 9050A	
3052795001	FFMP017W	SW846 9060A	
3052795001	FFMP017W	SW846 9066	420.4/9066
3052795002	FFMP018W	D6919-09	
3052795002	FFMP018W	EPA 300.0	
3052795002	FFMP018W	EPA 410.4	
3052795002	FFMP018W	Field	
3052795002	FFMP018W	S2540C-11	
3052795002	FFMP018W	S4500HB-11	
3052795002	FFMP018W	SM2130B-2011	
3052795002	FFMP018W	SM2320B-2011	
3052795002	FFMP018W	SW846 6010C	SW846 3015
3052795002	FFMP018W	SW846 8260B	
3052795002	FFMP018W	SW846 9050A	
3052795002	FFMP018W	SW846 9060A	
3052795002	FFMP018W	SW846 9066	420.4/9066
3052795003	FFMP019W	D6919-09	
3052795003	FFMP019W	EPA 300.0	
3052795003	FFMP019W	EPA 410.4	
3052795003	FFMP019W	Field	
3052795003	FFMP019W	S2540C-11	
3052795003	FFMP019W	S4500HB-11	
3052795003	FFMP019W	SM2130B-2011	
3052795003	FFMP019W	SM2320B-2011	
3052795003	FFMP019W	SW846 6010C	SW846 3015
3052795003	FFMP019W	SW846 8260B	
3052795003	FFMP019W	SW846 9050A	
3052795003	FFMP019W	SW846 9060A	
3052795003	FFMP019W	SW846 9066	420.4/9066
3052795004	FFMP029W	D6919-09	
3052795004	FFMP029W	EPA 300.0	
3052795004	FFMP029W	EPA 410.4	
3052795004	FFMP029W	Field	
3052795004	FFMP029W	S2540C-11	
3052795004	FFMP029W	S4500HB-11	
3052795004	FFMP029W	SM2130B-2011	

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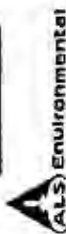
ANALYSIS - PREP METHOD CROSS REFERENCE TABLE

Workorder: 3052795 3rd QTR 2019 GWMP-FORM 19Q

Lab ID	Sample ID	Analysis Method	Prep Method
3052795004	FFMP029W	SM2320B-2011	
3052795004	FFMP029W	SW846 6010C	SW846 3015
3052795004	FFMP029W	SW846 8260B	
3052795004	FFMP029W	SW846 9050A	
3052795004	FFMP029W	SW846 9060A	
3052795004	FFMP029W	SW846 9066	420.4/9066
3052795005	FFMP005W	D6919-09	
3052795005	FFMP005W	EPA 300.0	
3052795005	FFMP005W	EPA 410.4	
3052795005	FFMP005W	Field	
3052795005	FFMP005W	S2540C-11	
3052795005	FFMP005W	S4500HB-11	
3052795005	FFMP005W	SM2130B-2011	
3052795005	FFMP005W	SM2320B-2011	
3052795005	FFMP005W	SW846 6010C	SW846 3015
3052795005	FFMP005W	SW846 8260B	
3052795005	FFMP005W	SW846 9050A	
3052795005	FFMP005W	SW846 9060A	
3052795005	FFMP005W	SW846 9066	420.4/9066

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ALS Environmental
 1000 Woodbury Ave. • Middletown, PA 17057 • Fax: 717.944.5541 • www.als.com

34 Dogwood Lane • Middletown, PA 17057 • 717.944.5541 • Fax: 717.944.1430

Client Name: Lancaster County Solid Waste MA
 Address: 1299 Hamisburg Pike, P.O. Box 4424
 Lancaster, PA 17604

Contact: Mark Reider
 Phone#: (717) 735-0193

Project Name#: Frey Farm Quarterly (GWMP)

Bill To: Lancaster County Solid Waste MA

TAT Normal-Standard TAT is 10-12 business days.
 Rush-Subject to ALS approval and surcharges.

Date Required: _____ Approved By: _____

Email? Y N mreider@LCSWMA.com

Fax? Y N No.: (717) 397-9973

Sample Description/Location
 (as it will appear on the lab report)

Sample	Date	Time
1. FFMP017W	08/20/19	0941
2. FFMP018W	08/20/19	1026
3. FFMP019W	08/20/19	1111
4. FFMP029W	08/20/19	1234
5. FFMP005W	08/20/19	1425
6		
7		
8		
9		
10		

Project Comments:

LOGGED BY (signature):

REVIEWED BY (signature):

Date	Time	Received By / Company Name
8/20/19	1536	ALS
8/20/19	1536	ALS

Relinquished By / Company Name

Date

Time

Received By / Company Name

1 1305300000 ALS

3

5

7

9

**CHAIN OF CUSTODY/
 REQUEST FOR ANALYSIS**
**ALL SHADED AREAS MUST BE COMPLETED BY THE CLIENT /
 SAMPLER. INSTRUCTIONS ON THE BACK.**

Generated by ALS

COC

ALS

Receipt Information: _____ (including Lab)

Cooler Temp: 8°C Therm ID: 305

No. of Coolers: 1 Y N Initial: MR

Custody Seals Present?

(If present) Seals Intact?

Received on Ice?

COC Labels Complete/Accurate?

Cont. in Good Cond.?

Correct Containers?

Correct Sample Volumes?

Correct Preservation?

Headspace/Volatiles?

Courier/Fracking #: _____

Sampler/COC Comments

Enter Number of Containers Per Sample or Field Results Below.	Field Measurements	VOC - Form 190	Sample Depth for AUX Data	Metals: Fe, Mn, Na, Ca, K, Mg	PH, Cl, SpC, F, SO4, TDS, NO3	Alkalinity Bicarbonate
2	X	2	X	1	1	1
2	X	2	X	1	1	1
2	X	2	X	1	1	1
2	X	2	X	1	1	1
2	X	2	X	1	1	1

ALS Field Services: Pickup Labor

Composite_Sampling Rental_Equipment

Other:

Standard

CLP-like

USACE

Special Processing

USACE

Navy

State Samples Collected In

NY

NJ

PA

NC

Sample Disposal

Lab

Special

Reportable to PADEP?

Yes

PWSID #

* EDDS; Format Type-



301 Fulling Mill Road
Middletown, PA 17057

P: (717) 944-5541

F: (717) 944-1430

Condition of Sample Receipt Form

Client: Lancaster County Solid WMA Work Order #: 3052795 Initials: JAS Date: 8/20/19

- | | | | |
|--|------|-----|----|
| 1. Were airbills / tracking numbers present and recorded?..... | NONE | YES | NO |
| Tracking number: _____ | | | |
| 2. Are Custody Seals on shipping containers intact?..... | NONE | YES | NO |
| 3. Are Custody Seals on sample containers intact?..... | NONE | YES | NO |
| 4. Is there a COC (Chain-of-Custody) present?..... | | YES | NO |
| 5. Are the COC and bottle labels complete, legible and in agreement?..... | | YES | NO |
| 5a. Does the COC contain sample locations?..... | | YES | NO |
| 5b. Does the COC contain date and time of sample collection for all samples?..... | | YES | NO |
| 5c. Does the COC contain sample collectors name?..... | | YES | NO |
| 5d. Does the COC note the type(s) of preservation for all bottles?..... | | YES | NO |
| 5e. Does the COC note the number of bottles submitted for each sample?..... | | YES | NO |
| 5f. Does the COC note the type of sample, composite or grab?..... | | YES | NO |
| 5g. Does the COC note the matrix of the sample(s)?..... | | YES | NO |
| 6. Are all aqueous samples requiring preservation preserved correctly?..... | N/A | YES | NO |
| 7. Were all samples placed in the proper containers for the requested analyses, with sufficient volume?..... | | YES | NO |
| 8. Are all samples within holding times for the requested analyses?..... | | YES | NO |
| 9. Were all sample containers received intact and headspace free when required? (not broken, leaking, frozen, etc.)..... | | YES | NO |
| 10. Did we receive trip blanks (applies only for methods EPA 504, EPA 524.2 and 1631E (LL Hg)?..... | N/A | YES | NO |
| 11. Were the samples received on ice?..... | | YES | NO |
| 12. Were sample temperatures measured at 0.0-6.0°C..... | | YES | NO |
| 13. Are the samples DW matrix ? If YES, fill out Reportable Drinking Water questions below..... | | YES | NO |
| 13a. Are the samples required for SDWA compliance reporting?..... | N/A | YES | NO |
| 13b. Did the client provide a SDWA PWS ID#?..... | N/A | YES | NO |
| 13c. Are all aqueous unpreserved SDWA samples pH 5-9?..... | N/A | YES | NO |
| 13d. Did the client provide the SDWA sample location ID/Description?..... | N/A | YES | NO |
| 13e. Did the client provide the SDWA sample type (D, E, R, C, P, S)?..... | N/A | YES | NO |

Cooler #: —
 Temperature (°C): 8°C
 Thermometer ID: 318
 Radiological (µCi): —

COMMENTS (Required for all NO responses above and any sample non-conformance):
Collected + Rec'd same day. Collected by ALS. Guw - Not Reportable. Rec'd out of hold for pH testing. JAS/MRS 8/20/19

September 4, 2019

Mr. Daniel Brown
Lancaster County Solid Waste Authority
1299 Hbg Pike, P.O. Box 4425
Lancaster, PA 17604

Certificate of Analysis

Project Name:	FREY FARM	Workorder:	3053834
Purchase Order:	PO1000126	Workorder ID:	3rd QTR 2019 GWMP-FORM 19Q

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Friday, August 23, 2019.

The ALS Environmental laboratory in Middletown, Pennsylvania is a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory and as such, certifies that all applicable test results meet the requirements of NELAP.

If you have any questions regarding this certificate of analysis, please contact Ms. Susan J Scherer (Project Coordinator) at (717) 944-5541.

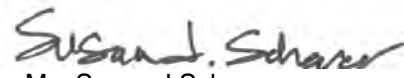
Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications section of the ALS website at www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads.

This laboratory report may not be reproduced, except in full, without the written approval of ALS Environmental.

ALS Spring City: 10 Riverside Drive, Spring City, PA 19475 610-948-4903

CC: Mr. Nicholas Rogers , Ms. Jordan Gallagher , Mr. Jeff Musser

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.


Ms. Susan J Scherer
Project Coordinator

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SAMPLE SUMMARY

Workorder: 3053834 3rd QTR 2019 GWMP-FORM 19Q

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
3053834001	FFMP26RW	Ground Water	8/23/2019 09:21	8/23/2019 17:59	Mr. Brian G Shade
3053834002	FFMP016W	Ground Water	8/23/2019 10:05	8/23/2019 17:59	Mr. Brian G Shade
3053834003	FIELD BLANK	Water	8/23/2019 16:00	8/23/2019 17:59	Mr. Brian G Shade
3053834004	TRIP BLANK	Water	8/23/2019 17:59	8/23/2019 17:59	Mr. Brian G Shade

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SAMPLE SUMMARY

Workorder: 3053834 3rd QTR 2019 GWMP-FORM 19Q

Notes

- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 - Field Services Sampling Plan).
- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
- The Chain of Custody document is included as part of this report.
- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are performed in the laboratory and are therefore analyzed out of hold time.
- Method references listed on this report beginning with the prefix "S" followed by a method number (such as S2310B-97) refer to methods from "Standard Methods for the Examination of Water and Wastewater".
- For microbiological analyses, the "Prepared" value is the date/time into the incubator and the "Analyzed" value is the date/time out the incubator.
- An Analysis-Prep Method Cross Reference Table is included after Analytical Results & Qualifiers section in this report.

Standard Acronyms/Flags

J	Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
U	Indicates that the analyte was Not Detected (ND)
N	Indicates presumptive evidence of the presence of a compound
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RDL	Reporting Detection Limit
ND	Not Detected - indicates that the analyte was Not Detected at the RDL
Cntr	Analysis was performed using this container
RegLmt	Regulatory Limit
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
%Rec	Percent Recovery
RPD	Relative Percent Difference
LOD	DoD Limit of Detection
LOQ	DoD Limit of Quantitation
DL	DoD Detection Limit
I	Indicates reported value is greater than or equal to the Method Detection Limit (MDL) but less than the Report Detection Limit (RDL)
(S)	Surrogate Compound
NC	Not Calculated
*	Result outside of QC limits

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ANALYTICAL RESULTS

Workorder: 3053834 3rd QTR 2019 GWMP-FORM 19Q

Lab ID: 3053834001	Date Collected: 8/23/2019 09:21	Matrix: Ground Water
Sample ID: FFMP26RW	Date Received: 8/23/2019 17:59	

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			8/29/19 23:42	PDK	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			8/29/19 23:42	PDK	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/29/19 23:42	PDK	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/29/19 23:42	PDK	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/29/19 23:42	PDK	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/29/19 23:42	PDK	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/29/19 23:42	PDK	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			8/29/19 23:42	PDK	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			8/29/19 23:42	PDK	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			8/29/19 23:42	PDK	G
Toluene	ND		ug/L	1.0	SW846 8260B			8/29/19 23:42	PDK	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			8/29/19 23:42	PDK	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			8/29/19 23:42	PDK	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			8/29/19 23:42	PDK	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			8/29/19 23:42	PDK	G
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	126		%	62 - 133	SW846 8260B			8/29/19 23:42	PDK	G
4-Bromofluorobenzene (S)	101		%	79 - 114	SW846 8260B			8/29/19 23:42	PDK	G
Dibromofluoromethane (S)	104		%	78 - 116	SW846 8260B			8/29/19 23:42	PDK	G
Toluene-d8 (S)	110		%	76 - 127	SW846 8260B			8/29/19 23:42	PDK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	46		mg/L	5	SM2320B-2011			8/29/19 07:58	MBW	B
Alkalinity, Total	46	2	mg/L	5	SM2320B-2011			8/29/19 07:58	MBW	B
Ammonia-N	ND		mg/L	0.100	D6919-09			8/29/19 20:41	AK	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			8/28/19 13:26	AK	A
Chloride	191		mg/L	5.0	EPA 300.0			8/28/19 10:06	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			8/24/19 14:11	CHW	B
Nitrate-N	2.3		mg/L	0.20	EPA 300.0			8/24/19 14:11	CHW	B
pH	6.00	1	pH_Units		S4500HB-11			8/29/19 07:58	MBW	B
Phenolics	ND		mg/L	0.005	SW846 9066	8/28/19 06:54	C_D	8/28/19 08:23	C_D	F
Specific Conductance	912		umhos/cm	1	SW846 9050A			8/29/19 07:58	MBW	B
Sulfate	74.5		mg/L	2.0	EPA 300.0			8/24/19 14:11	CHW	B
Total Dissolved Solids	622		mg/L	5	S2540C-11			8/29/19 15:32	D1C	B
Total Organic Carbon (TOC)	1.6		mg/L	0.50	SW846 9060A			8/31/19 09:03	PAG	D
Turbidity	0.44		NTU	0.10	SM2130B-2011			8/24/19 06:53	R2B	B

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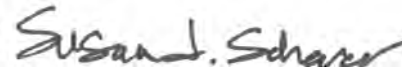
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ANALYTICAL RESULTS

Workorder: 3053834 3rd QTR 2019 GWMP-FORM 19Q

Lab ID: **3053834001** Date Collected: 8/23/2019 09:21 Matrix: Ground Water
 Sample ID: **FFMP26RW** Date Received: 8/23/2019 17:59

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	67.8		mg/L	0.11	SW846 6010C	8/27/19 16:40	SXC	8/28/19 12:02	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	8/27/19 16:40	SXC	8/28/19 12:02	SRT	J1
Magnesium, Total	19.1		mg/L	0.11	SW846 6010C	8/27/19 16:40	SXC	8/28/19 12:02	SRT	J1
Manganese, Total	0.51		mg/L	0.0056	SW846 6010C	8/27/19 16:40	SXC	8/28/19 12:02	SRT	J1
Potassium, Total	8.0		mg/L	0.56	SW846 6010C	8/27/19 16:40	SXC	8/28/19 12:02	SRT	J1
Sodium, Total	60.0		mg/L	0.56	SW846 6010C	8/27/19 16:40	SXC	8/28/19 12:02	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	78.81		Feet		Field			8/23/19 09:21	BGS	C
Elev Top MW Casing above MSL	547.40		Feet		Field			8/23/19 09:21	BGS	C
Flow Rate	2.52		gal/min		Field			8/23/19 09:21	BGS	C
Ground Water Elevation	468.59		ft/MSL		Field			8/23/19 09:21	BGS	C
pH, Field (SM4500B)	5.61		pH_Units		Field			8/23/19 09:21	BGS	C
Sample Depth	105.00		Feet		Field			8/23/19 09:21	BGS	C
Specific Conductance, Field	945		umhos/cm	1	Field			8/23/19 09:21	BGS	C
Temperature	11.79		Deg. C		Field			8/23/19 09:21	BGS	C
Total Well Depth	118.30		Feet		Field			8/23/19 09:21	BGS	C
Volume in Water Column	58.05		Gallons		Field			8/23/19 09:21	BGS	C
Water Level After Purge	94.93		Feet		Field			8/23/19 09:21	BGS	C
Well Volumes Purged	2.60		Vol		Field			8/23/19 09:21	BGS	C



Ms. Susan J Scherer
 Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3053834 3rd QTR 2019 GWMP-FORM 19Q

Lab ID: **3053834002**

Date Collected: 8/23/2019 10:05

Matrix: Ground Water

Sample ID: **FFMP016W**

Date Received: 8/23/2019 17:59

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND	6	ug/L	1.0	SW846 8260B			8/30/19 00:04	PDK	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			8/30/19 00:04	PDK	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/30/19 00:04	PDK	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/30/19 00:04	PDK	G
1,1-Dichloroethene	ND	3	ug/L	1.0	SW846 8260B			8/30/19 00:04	PDK	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/30/19 00:04	PDK	G
trans-1,2-Dichloroethene	ND	5	ug/L	1.0	SW846 8260B			8/30/19 00:04	PDK	G
Ethylbenzene	ND	9	ug/L	1.0	SW846 8260B			8/30/19 00:04	PDK	G
Methylene Chloride	ND	4	ug/L	1.0	SW846 8260B			8/30/19 00:04	PDK	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			8/30/19 00:04	PDK	G
Toluene	ND	7,8	ug/L	1.0	SW846 8260B			8/30/19 00:04	PDK	G
Total Xylenes	ND	2	ug/L	3.0	SW846 8260B			8/30/19 00:04	PDK	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			8/30/19 00:04	PDK	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			8/30/19 00:04	PDK	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			8/30/19 00:04	PDK	G
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	128		%	62 - 133	SW846 8260B			8/30/19 00:04	PDK	G
4-Bromofluorobenzene (S)	99.9		%	79 - 114	SW846 8260B			8/30/19 00:04	PDK	G
Dibromofluoromethane (S)	103		%	78 - 116	SW846 8260B			8/30/19 00:04	PDK	G
Toluene-d8 (S)	108		%	76 - 127	SW846 8260B			8/30/19 00:04	PDK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	42		mg/L	5	SM2320B-2011			8/29/19 08:32	MBW	B
Alkalinity, Total	42	10	mg/L	5	SM2320B-2011			8/29/19 08:32	MBW	B
Ammonia-N	ND		mg/L	0.100	D6919-09			8/29/19 21:31	AK	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			8/28/19 13:26	AK	A
Chloride	83.1		mg/L	2.0	EPA 300.0			8/24/19 14:26	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			8/24/19 14:26	CHW	B
Nitrate-N	11.5		mg/L	0.20	EPA 300.0			8/24/19 14:26	CHW	B
pH	6.22	1	pH_Units		S4500HB-11			8/29/19 08:32	MBW	B
Phenolics	ND		mg/L	0.005	SW846 9066	8/28/19 06:54	C_D	8/28/19 08:23	C_D	F
Specific Conductance	479		umhos/cm	1	SW846 9050A			8/29/19 08:32	MBW	B
Sulfate	27.8		mg/L	2.0	EPA 300.0			8/24/19 14:26	CHW	B
Total Dissolved Solids	322		mg/L	5	S2540C-11			8/29/19 15:32	D1C	B
Total Organic Carbon (TOC)	0.97		mg/L	0.50	SW846 9060A			8/31/19 09:03	PAG	D
Turbidity	0.26		NTU	0.10	SM2130B-2011			8/24/19 06:53	R2B	B

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ANALYTICAL RESULTS

Workorder: 3053834 3rd QTR 2019 GWMP-FORM 19Q

Lab ID: **3053834002** Date Collected: 8/23/2019 10:05 Matrix: Ground Water
 Sample ID: **FFMP016W** Date Received: 8/23/2019 17:59

Parameters	Results	Flag	Units	RDL	Method	Prepared By	Analyzed By	Cntr	
METALS									
Calcium, Total	29.9		mg/L	0.11	SW846 6010C	8/27/19 16:40 SXC	8/28/19 12:06	SRT J1	
Iron, Total	ND		mg/L	0.067	SW846 6010C	8/27/19 16:40 SXC	8/28/19 12:06	SRT J1	
Magnesium, Total	14.2		mg/L	0.11	SW846 6010C	8/27/19 16:40 SXC	8/28/19 12:06	SRT J1	
Manganese, Total	0.026		mg/L	0.0056	SW846 6010C	8/27/19 16:40 SXC	8/28/19 12:06	SRT J1	
Potassium, Total	2.2		mg/L	0.56	SW846 6010C	8/27/19 16:40 SXC	8/28/19 12:06	SRT J1	
Sodium, Total	26.7		mg/L	0.56	SW846 6010C	8/27/19 16:40 SXC	8/28/19 12:06	SRT J1	
FIELD PARAMETERS									
Depth to Water Level	13.81		Feet		Field		8/23/19 11:45	BGS C	
Elev Top MW Casing above MSL	474.60		Feet		Field		8/23/19 11:45	BGS C	
Ground Water Elevation	460.79		ft/MSL		Field		8/23/19 11:45	BGS C	
pH, Field (SM4500B)	6.27		pH_Units		Field		8/23/19 11:45	BGS C	
Sample Depth	135.00		Feet		Field		8/23/19 11:45	BGS C	
Specific Conductance, Field	7		umhos/cm	1	Field		8/23/19 11:45	BGS C	
Temperature	17.58		Deg. C		Field		8/23/19 11:45	BGS C	
Total Well Depth	149.80		Feet		Field		8/23/19 11:45	BGS C	
Volume in Water Column	354.93		Gallons		Field		8/23/19 11:45	BGS C	

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ANALYTICAL RESULTS

Workorder: 3053834 3rd QTR 2019 GWMP-FORM 19Q

Lab ID: **3053834003**
Sample ID: **FIELD BLANK**

Date Collected: 8/23/2019 16:00 Matrix: Water
Date Received: 8/23/2019 17:59

Parameters	Results	Flag	Units	RDL	Method	Prepared By	Analyzed By	Cntr
VOLATILE ORGANICS								
Acetone	13.0		ug/L	10.0	SW846 8260B		8/29/19 21:49	PDK H
Acrylonitrile	ND		ug/L	5.0	SW846 8260B		8/29/19 21:49	PDK H
Benzene	ND		ug/L	1.0	SW846 8260B		8/29/19 21:49	PDK H
Bromochloromethane	ND		ug/L	1.0	SW846 8260B		8/29/19 21:49	PDK H
Bromodichloromethane	ND		ug/L	1.0	SW846 8260B		8/29/19 21:49	PDK H
Bromoform	ND		ug/L	1.0	SW846 8260B		8/29/19 21:49	PDK H
Bromomethane	ND		ug/L	1.0	SW846 8260B		8/29/19 21:49	PDK H
2-Butanone	ND		ug/L	10.0	SW846 8260B		8/29/19 21:49	PDK H
Carbon Disulfide	ND		ug/L	1.0	SW846 8260B		8/29/19 21:49	PDK H
Carbon Tetrachloride	ND		ug/L	1.0	SW846 8260B		8/29/19 21:49	PDK H
Chlorobenzene	ND		ug/L	1.0	SW846 8260B		8/29/19 21:49	PDK H
Chlorodibromomethane	ND		ug/L	1.0	SW846 8260B		8/29/19 21:49	PDK H
Chloroethane	ND		ug/L	1.0	SW846 8260B		8/29/19 21:49	PDK H
Chloroform	ND		ug/L	1.0	SW846 8260B		8/29/19 21:49	PDK H
Chloromethane	ND		ug/L	1.0	SW846 8260B		8/29/19 21:49	PDK H
3-Chloro-1-propene	ND		ug/L	1.0	SW846 8260B		8/29/19 21:49	PDK H
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	SW846 8260B		8/29/19 21:49	PDK H
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B		8/29/19 21:49	PDK H
Dibromomethane	ND		ug/L	1.0	SW846 8260B		8/29/19 21:49	PDK H
trans-1,4-Dichloro-2-butene	ND		ug/L	3.0	SW846 8260B		8/29/19 21:49	PDK H
1,2-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B		8/29/19 21:49	PDK H
1,3-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B		8/29/19 21:49	PDK H
1,4-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B		8/29/19 21:49	PDK H
Dichlorodifluoromethane	ND		ug/L	1.0	SW846 8260B		8/29/19 21:49	PDK H
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B		8/29/19 21:49	PDK H
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B		8/29/19 21:49	PDK H
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B		8/29/19 21:49	PDK H
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B		8/29/19 21:49	PDK H
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B		8/29/19 21:49	PDK H
1,2-Dichloropropane	ND		ug/L	1.0	SW846 8260B		8/29/19 21:49	PDK H
cis-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B		8/29/19 21:49	PDK H
trans-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B		8/29/19 21:49	PDK H
Ethylbenzene	ND		ug/L	1.0	SW846 8260B		8/29/19 21:49	PDK H
2-Hexanone	ND		ug/L	5.0	SW846 8260B		8/29/19 21:49	PDK H
Iodomethane	ND		ug/L	1.0	SW846 8260B		8/29/19 21:49	PDK H
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	SW846 8260B		8/29/19 21:49	PDK H

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ANALYTICAL RESULTS

Workorder: 3053834 3rd QTR 2019 GWMP-FORM 19Q

 Lab ID: **3053834003**
 Sample ID: **FIELD BLANK**

 Date Collected: 8/23/2019 16:00 Matrix: Water
 Date Received: 8/23/2019 17:59

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			8/29/19 21:49	PDK	H
Styrene	ND		ug/L	1.0	SW846 8260B			8/29/19 21:49	PDK	H
1,1,1,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			8/29/19 21:49	PDK	H
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			8/29/19 21:49	PDK	H
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			8/29/19 21:49	PDK	H
Toluene	ND		ug/L	1.0	SW846 8260B			8/29/19 21:49	PDK	H
Total Xylenes	ND		ug/L	3.0	SW846 8260B			8/29/19 21:49	PDK	H
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			8/29/19 21:49	PDK	H
1,1,2-Trichloroethane	ND		ug/L	1.0	SW846 8260B			8/29/19 21:49	PDK	H
Trichloroethene	ND		ug/L	1.0	SW846 8260B			8/29/19 21:49	PDK	H
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			8/29/19 21:49	PDK	H
1,2,3-Trichloropropane	ND		ug/L	2.0	SW846 8260B			8/29/19 21:49	PDK	H
Vinyl Acetate	ND		ug/L	5.0	SW846 8260B			8/29/19 21:49	PDK	H
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			8/29/19 21:49	PDK	H
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	121		%	62 - 133	SW846 8260B			8/29/19 21:49	PDK	H
4-Bromofluorobenzene (S)	102		%	79 - 114	SW846 8260B			8/29/19 21:49	PDK	H
Dibromofluoromethane (S)	103		%	78 - 116	SW846 8260B			8/29/19 21:49	PDK	H
Toluene-d8 (S)	111		%	76 - 127	SW846 8260B			8/29/19 21:49	PDK	H
WET CHEMISTRY										
Alkalinity, Bicarbonate	ND		mg/L	5	SM2320B-2011			8/29/19 08:40	MBW	B
Alkalinity, Total	ND	1	mg/L	5	SM2320B-2011			8/29/19 08:40	MBW	B
Ammonia-N	ND		mg/L	0.100	D6919-09			8/29/19 21:48	AK	C
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			8/28/19 13:26	AK	C
Chloride	ND		mg/L	1.0	EPA 300.0			8/24/19 14:42	CHW	B
Fluoride	ND		mg/L	0.10	EPA 300.0			8/24/19 14:42	CHW	B
Nitrate-N	ND		mg/L	0.10	EPA 300.0			8/24/19 14:42	CHW	B
pH	6.22	2	pH_Units		S4500HB-11			8/29/19 08:40	MBW	B
Phenolics	ND		mg/L	0.005	SW846 9066	8/28/19 06:54	C_D	8/28/19 08:23	C_D	G
Specific Conductance	ND		umhos/cm	1	SM2510B-2011			8/29/19 08:40	MBW	B
Sulfate	ND		mg/L	1.0	EPA 300.0			8/24/19 14:42	CHW	B
Total Dissolved Solids	ND		mg/L	25	S2540C-11			8/29/19 15:32	D1C	B
Total Organic Carbon (TOC)	ND		mg/L	0.50	SM5310B-2011			8/31/19 18:57	PAG	E
Turbidity	ND		NTU	0.10	SM2130B-2011			8/24/19 06:53	R2B	B
METALS										
Calcium, Total	0.11		mg/L	0.11	SW846 6020A	9/3/19 16:40	AHI	9/4/19 14:50	MO	D1

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ANALYTICAL RESULTS

Workorder: 3053834 3rd QTR 2019 GWMP-FORM 19Q

Lab ID: **3053834003** Date Collected: 8/23/2019 16:00 Matrix: Water
 Sample ID: **FIELD BLANK** Date Received: 8/23/2019 17:59

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Iron, Total	ND		mg/L	0.056	SW846 6020A	9/3/19 16:40	AHI	9/4/19 14:50	MO	D1
Magnesium, Total	ND		mg/L	0.11	SW846 6020A	9/3/19 16:40	AHI	9/4/19 14:50	MO	D1
Manganese, Total	ND		mg/L	0.0056	SW846 6020A	9/3/19 16:40	AHI	9/4/19 14:50	MO	D1
Potassium, Total	ND		mg/L	0.11	SW846 6020A	9/3/19 16:40	AHI	9/4/19 14:50	MO	D1
Sodium, Total	0.13		mg/L	0.11	SW846 6020A	9/3/19 16:40	AHI	9/4/19 14:50	MO	D1

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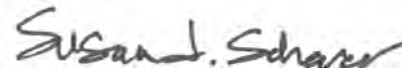
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ANALYTICAL RESULTS

Workorder: 3053834 3rd QTR 2019 GWMP-FORM 19Q

Lab ID: **3053834004** Date Collected: 8/23/2019 17:59 Matrix: Water
Sample ID: **TRIP BLANK** Date Received: 8/23/2019 17:59

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			8/29/19 22:57	PDK	A
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			8/29/19 22:57	PDK	A
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/29/19 22:57	PDK	A
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/29/19 22:57	PDK	A
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/29/19 22:57	PDK	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/29/19 22:57	PDK	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/29/19 22:57	PDK	A
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			8/29/19 22:57	PDK	A
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			8/29/19 22:57	PDK	A
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			8/29/19 22:57	PDK	A
Toluene	ND		ug/L	1.0	SW846 8260B			8/29/19 22:57	PDK	A
Total Xylenes	ND		ug/L	3.0	SW846 8260B			8/29/19 22:57	PDK	A
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			8/29/19 22:57	PDK	A
Trichloroethene	ND		ug/L	1.0	SW846 8260B			8/29/19 22:57	PDK	A
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			8/29/19 22:57	PDK	A
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	126		%	62 - 133	SW846 8260B			8/29/19 22:57	PDK	A
4-Bromofluorobenzene (S)	102		%	79 - 114	SW846 8260B			8/29/19 22:57	PDK	A
Dibromofluoromethane (S)	106		%	78 - 116	SW846 8260B			8/29/19 22:57	PDK	A
Toluene-d8 (S)	110		%	76 - 127	SW846 8260B			8/29/19 22:57	PDK	A



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ANALYTICAL RESULTS

Workorder: 3053834 3rd QTR 2019 GWMP-FORM 19Q

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
3053834001	1	FFMP26RW	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
3053834001	2	FFMP26RW	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
3053834002	1	FFMP016W	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
3053834002	2	FFMP016W	SW846 8260B	Total Xylenes
The QC sample type MS for method SW846 8260B was outside the control limits for the analyte Total Xylenes. The % Recovery was reported as 137 and the control limits were 79 to 125.				
3053834002	3	FFMP016W	SW846 8260B	1,1-Dichloroethene
The QC sample type MS for method SW846 8260B was outside the control limits for the analyte 1,1-Dichloroethene. The % Recovery was reported as 129 and the control limits were 63 to 128.				
3053834002	4	FFMP016W	SW846 8260B	Methylene Chloride
The QC sample type MS for method SW846 8260B was outside the control limits for the analyte Methylene Chloride. The % Recovery was reported as 122 and the control limits were 76 to 121.				
3053834002	5	FFMP016W	SW846 8260B	trans-1,2-Dichloroethene
The QC sample type MS for method SW846 8260B was outside the control limits for the analyte trans-1,2-Dichloroethene. The % Recovery was reported as 129 and the control limits were 71 to 122.				
3053834002	6	FFMP016W	SW846 8260B	Benzene
The QC sample type MS for method SW846 8260B was outside the control limits for the analyte Benzene. The % Recovery was reported as 135 and the control limits were 80 to 124.				
3053834002	7	FFMP016W	SW846 8260B	Toluene
The QC sample type MS for method SW846 8260B was outside the control limits for the analyte Toluene. The % Recovery was reported as 173 and the control limits were 80 to 125.				
3053834002	8	FFMP016W	SW846 8260B	Toluene
The QC sample type MSD for method SW846 8260B was outside the control limits for the analyte Toluene. The RPD was reported as 32.3 and the upper control limit is 20.				
3053834002	9	FFMP016W	SW846 8260B	Ethylbenzene
The QC sample type MS for method SW846 8260B was outside the control limits for the analyte Ethylbenzene. The % Recovery was reported as 125 and the control limits were 80 to 124.				
3053834002	10	FFMP016W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
3053834003	1	FIELD BLANK	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
3053834003	2	FIELD BLANK	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				

ALS Environmental Laboratory Locations Across North America

Canada: Burlington · Calgary · Centre of Excellence · Edmonton · Fort McMurray · Fort St. John · Grande Prairie · London · Mississauga · Richmond Hill · Saskatoon · Thunder Bay
Vancouver Waterloo · Winnipeg · Yellowknife United States: Cincinnati · Everett · Fort Collins · Holland · Houston · Middletown · Salt Lake City · Spring City · York Mexico: Monterrey

ANALYSIS - PREP METHOD CROSS REFERENCE TABLE

Workorder: 3053834 3rd QTR 2019 GWMP-FORM 19Q

Lab ID	Sample ID	Analysis Method	Prep Method
3053834001	FFMP26RW	D6919-09	
3053834001	FFMP26RW	EPA 300.0	
3053834001	FFMP26RW	EPA 410.4	
3053834001	FFMP26RW	Field	
3053834001	FFMP26RW	S2540C-11	
3053834001	FFMP26RW	S4500HB-11	
3053834001	FFMP26RW	SM2130B-2011	
3053834001	FFMP26RW	SM2320B-2011	
3053834001	FFMP26RW	SW846 6010C	SW846 3015
3053834001	FFMP26RW	SW846 8260B	
3053834001	FFMP26RW	SW846 9050A	
3053834001	FFMP26RW	SW846 9060A	
3053834001	FFMP26RW	SW846 9066	420.4/9066
3053834002	FFMP016W	D6919-09	
3053834002	FFMP016W	EPA 300.0	
3053834002	FFMP016W	EPA 410.4	
3053834002	FFMP016W	Field	
3053834002	FFMP016W	S2540C-11	
3053834002	FFMP016W	S4500HB-11	
3053834002	FFMP016W	SM2130B-2011	
3053834002	FFMP016W	SM2320B-2011	
3053834002	FFMP016W	SW846 6010C	SW846 3015
3053834002	FFMP016W	SW846 8260B	
3053834002	FFMP016W	SW846 9050A	
3053834002	FFMP016W	SW846 9060A	
3053834002	FFMP016W	SW846 9066	420.4/9066
3053834003	FIELD BLANK	D6919-09	
3053834003	FIELD BLANK	EPA 300.0	
3053834003	FIELD BLANK	EPA 410.4	
3053834003	FIELD BLANK	S2540C-11	
3053834003	FIELD BLANK	S4500HB-11	
3053834003	FIELD BLANK	SM2130B-2011	
3053834003	FIELD BLANK	SM2320B-2011	
3053834003	FIELD BLANK	SM2510B-2011	
3053834003	FIELD BLANK	SM5310B-2011	
3053834003	FIELD BLANK	SW846 6020A	SW846 3015
3053834003	FIELD BLANK	SW846 8260B	
3053834003	FIELD BLANK	SW846 9066	420.4/9066
3053834004	TRIP BLANK	SW846 8260B	

ALS Environmental Laboratory Locations Across North America

Canada: Burlington · Calgary · Centre of Excellence · Edmonton · Fort McMurray · Fort St. John · Grande Prairie · London · Mississauga · Richmond Hill · Saskatoon · Thunder Bay
Vancouver Waterloo · Winnipeg · Yellowknife United States: Cincinnati · Everett · Fort Collins · Holland · Houston · Middletown · Salt Lake City · Spring City · York Mexico: Monterrey



34 Dogwood Lane • Middletown, PA 17057 • 717-944-3541 • Fax: 717-944-1430
 14 Dogwood Lane • Middletown, PA 17057 • Phone: 717-944-3541 • Fax: 717-944-1430 • www.alsenv.com

**CHAIN OF CUSTODY/
REQUEST FOR ANALYSIS**
**ALL SHADED AREAS MUST BE COMPLETED BY THE CLIENT /
SAMPLER. INSTRUCTIONS ON THE BACK.**

Generated by ALS
 COI
 ALS
 Receipt information (completed by receiving Lab)
 Cooler Temp: 9.2 Therm ID: 403
 No. of Coolers: Y N Initial

Custody Seals Present?
 (if present) Seals Intact?
 Received on Ice?
 COC/Labels Complete/Accurate?
 Cont. in Good Cond.?
 Correct Containers?
 Correct Sample Volumes?
 Correct Preservation?
 Headspace/Volatiles?
 Courier/Tracking #:

ANALYSES/METHOD REQUESTED

Container Type	AG	AW	CG	PL	PL	PL	PL	PL
Container Size	40 ml	120 ml	40 ml	250 ml	120 ml	500 ml	500 ml	500 ml
Preservatives	HCl	H2SO4	HCl	H2SO4	HNO3	None	None	None

Client Name: Lancaster County Solid Waste MA
 Address: 1299 Harrisburg Pike, P.O. Box 4424
 Lancaster, PA 17604
 Contact: Mark Reider
 Phone#: (717) 735-0193
 Project Name#: Frey Farm Quarterly (GWMP)
 Bill To: Lancaster County Solid Waste MA
 Normal-Standard TAT is 10-12 business days.
 Rush-Subject to ALS approval and surcharges.
 Date Required: _____ Approved By: _____
 Email? Y mreider@LCSWMA.com
 Fax? Y No.: (717) 397-9973

Sample Description/Location (as it will appear on the lab report)	Sample Date	Time	Enter Number of Containers Per Sample or Field Results Below.														
			G	OC	Matrix	TOC	O-H	VOC - Form 190	Field Measurements	Sample Depth for AUX Data	NH3-N, COD	Metals: Fe, Mn, Na, Ca, K, Mg	pH, Cl, SPC, F, SO4, TDS, NO3, Turb.	Alkalinity Bicarbonate			
1. FFMP26RW	08/23/19	0921	G	GW	2	1	2	1	2	X	X	1	1	1	1	1	1
2. FFMP016W	08/23/19	1005	G	GW	2	1	2	1	2	X	X	1	1	1	1	1	1
3. Field Blank	08/23/19	1600	G	GW	2	1	2	1	2			1	1	1	1	1	1
4. Trip Blank	08/23/19	1719	G	GW	2		2		2								
5																	
6																	
7																	
8																	
9																	
10																	

Project Comments:
 Relinquished By / Company Name: ALS
 Date: 8/20/19 1359
 Time: 1759
 Received By / Company Name: [Signature]
 Date: 8/29/19
 Time: 1759

LOGGED BY (signature):
 REVIEWED BY (signature):

ALS Field Services: Pickup Labor
 Composite_Sampling Rental_Equipment
 Other:

Special Processing: USACE Navy
 State Samples Collected In: NY NJ PA NC

Reportable to PADEP? Yes No
 Sample Disposal: Lab Special
 PWSID #:
 EDDS: Formal Type:

* G=Grab; C=Composite **Matrix - AP=Air; DW=Drinking Water; GW=Groundwater; Oil=Oil; OL=Other Liquid; SL=Sludge; SO=Soil; WP=Wipe; WW=Wastewater
 ALS ENVIRONMENTAL SHIPPING ADDRESS: 34 DOGWOOD LANE, MIDDLETOWN, PA 17057
 Rev 8/04





301 Fulling Mill Road
Middletown, PA 17057

P: (717) 944-5541

F: (717) 944-1430

Condition of Sample Receipt Form

Client: LC3WMA Work Order #: 3053834 Initials: qu Date: 8/24/19

- | | | | |
|--|---------------------------------------|--------------------------------------|-------------------------------------|
| 1. Were airbills / tracking numbers present and recorded?..... | <input checked="" type="radio"/> NONE | YES | NO |
| Tracking number: _____ | | | |
| 2. Are Custody Seals on shipping containers intact?..... | <input checked="" type="radio"/> NONE | YES | NO |
| 3. Are Custody Seals on sample containers intact?..... | <input checked="" type="radio"/> NONE | YES | NO |
| 4. Is there a COC (Chain-of-Custody) present?..... | <input checked="" type="radio"/> YES | | NO |
| 5. Are the COC and bottle labels complete, legible and in agreement?..... | <input checked="" type="radio"/> YES | | NO |
| 5a. Does the COC contain sample locations?..... | <input checked="" type="radio"/> YES | | NO |
| 5b. Does the COC contain date and time of sample collection for all samples?..... | <input checked="" type="radio"/> YES | | NO |
| 5c. Does the COC contain sample collectors name?..... | <input checked="" type="radio"/> YES | | NO |
| 5d. Does the COC note the type(s) of preservation for all bottles?..... | <input checked="" type="radio"/> YES | | NO |
| 5e. Does the COC note the number of bottles submitted for each sample?..... | <input checked="" type="radio"/> YES | | NO |
| 5f. Does the COC note the type of sample, composite or grab?..... | <input checked="" type="radio"/> YES | | NO |
| 5g. Does the COC note the matrix of the sample(s)?..... | <input checked="" type="radio"/> YES | | NO |
| 6. Are all aqueous samples requiring preservation preserved correctly? | N/A | <input checked="" type="radio"/> YES | NO |
| 7. Were all samples placed in the proper containers for the requested analyses, with sufficient volume?..... | | <input checked="" type="radio"/> YES | NO |
| 8. Are all samples within holding times for the requested analyses?..... | | <input checked="" type="radio"/> YES | NO |
| 9. Were all sample containers received intact and headspace free when required? (not broken, leaking, frozen, etc.)..... | | <input checked="" type="radio"/> YES | NO |
| 10. Did we receive trip blanks (applies only for methods EPA 504, EPA 524.2 and 1631E (LL Hg)?..... | N/A | <input checked="" type="radio"/> YES | NO |
| 11. Were the samples received on ice?..... | | <input checked="" type="radio"/> YES | NO |
| 12. Were sample temperatures measured at 0.0-6.0°C..... <u>collected same day</u> | | YES | <input checked="" type="radio"/> NO |
| 13. Are the samples DW matrix ? If YES, fill out Reportable Drinking Water questions below..... | | YES | <input checked="" type="radio"/> NO |
| 13a. Are the samples required for SDWA compliance reporting?..... | <input checked="" type="radio"/> N/A | YES | NO |
| 13b. Did the client provide a SDWA PWS ID#?..... | <input checked="" type="radio"/> N/A | YES | NO |
| 13c. Are all aqueous unpreserved SDWA samples pH 5-9?..... | <input checked="" type="radio"/> N/A | YES | NO |
| 13d. Did the client provide the SDWA sample location ID/Description?..... | <input checked="" type="radio"/> N/A | YES | NO |
| 13e. Did the client provide the SDWA sample type (D, E, R, C, P, S)?..... | <input checked="" type="radio"/> N/A | YES | NO |

Cooler #: _____

Temperature (°C): 9°C _____

Thermometer ID: 403 _____

Radiological (µCi): _____

COMMENTS (Required for all NO responses above and any sample non-conformance):





**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT**

Date Prepared/Revised 10/17/2019
DEP USE ONLY
Date Received

**FORM 50
MUNICIPAL WASTE LANDFILL
LEACHATE ANALYSES**

This form must be fully and accurately completed. All required information must be typed or legibly printed in the spaces provided. If additional space is necessary, identify each attached sheet as Form 50, reference the item number and identify the date prepared. The "date prepared/revised" on any attached sheets needs to match the "date prepared/revised" on this page.

General Reference: Section 273.255(d) and (e) and 273.276(a)
Federal Regulations, Subtitle D: 258.54 and Appendix I to Part 258.

SECTION A. SITE IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Management Aut
 Site Name: Frey Farm Landfill
 Facility ID (as issued by DEP): 101389

SECTION B. FACILITY INFORMATION

Facility Name: Frey Farm Landfill
 Sampling Point Number: FFLEINFS
 Location: County Lancaster County Municipality: Manor
 Sampling Point Latitude: 39 ° 57 ' 11.29 " Longitude: 76 ° 27 ' 6.42 "
 Sampling Method: Pumped Bailed Grab
 Sample Field Filtered (must be 0.45 micron): Yes No
 Sample Date (mm/dd/yy): 8/28/2019 Sample Collection Time: 14:10
 Sample Collector's Name: Mr. Jeff Musser
 Sample Collector's Affiliation: LCSWMA
 Laboratory(ies) Performing Analysis: ALS Environmental
 Lab Certification Number(s): 22-293
 Lab Sample Number(s): 3054578001 Final Lab Analysis Completion Date: 9/7/2019
 Were any holding times exceeded?: Yes No If yes, please explain in comments field.
 Name/Affiliation of Person who Filled Out Form: Nick R. Rogers

Comments:

**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT**

Monitoring Point No.	FFLEINFS
Sample Date	8/28/2019
I.D. No	101389

**FORM 50
QUARTERLY MUNICIPAL WASTE LANDFILL
LEACHATE ANALYSES**

For new facilities and cells as well as existing facilities which were permitted and which received waste after April 9, 1988, discharge flow volume from leachate collection shall be measured daily [273.276(a)(1)]. Discharge flow volume from the detection zone shall be estimated weekly [273.255(d)(2)]. Form 50 is due quarterly after the flow of leachate from the collection system has started. For facilities or cells which have received no waste since April 9, 1988, detection zone monitoring will meet permit/closure requirements.

FLOW FACTOR	LEACHATE DISCHARGE	DETECTION ZONE DISCHARGE
Volume (average gpd)	14104.78	
Area Drained (acres)	92.63	
Ratio (gallons/acre/day)	152.27	

Once leachate flow begins from a leachate collection system, leachate discharge will be analyzed quarterly for all analytes listed below. In the leachate detection zone, any fluid found in any detection zone monitoring point must be sampled during the initial four quarters for the leachate indicator parameters (designated by *, below) to establish a baseline fluid composition. Thereafter, any fluid detected in each monitoring point in the leachate detection zone must be sampled annually for the leachate indicator parameters. Quarterly sampling of the fluid in any detection zone monitoring point for leachate indicator parameters is required only when the quarterly flow at that monitoring point exceeds 10 gallons per acre per day (weekly average for the quarter) for the cell(s) served by that monitoring point. If the indicator analytes confirm leachate contamination in the detection zone, the fluid will be analyzed initially within 30 days and thereafter annually for all analytes listed below. When MCL's (where established) of any detection zone analytes on this form are exceeded, annual groundwater monitoring must include the Subtitle D detection zone add-on list analytes found on Form 19.

ANALYTE mg/l unless otherwise indicated		LEACHATE DISCHARGE	DETECTION ZONE DISCHARGE	ANALYSIS METHOD NUMBER
1.	ALKALINITY p	487		SM20-2320B
2.	AMMONIA-NITROGEN p	1690		ASTM D6919-03
3.	BICARBONATE ALKALINITY p	487		SM20-2321
4.	CALCIUM, TOTAL p	1640		SW846 6010C
5.	COD (CHEMICAL OXYGEN DEMAND) p	3120		EPA 410.4
6.	CHLORIDE p	19400		EPA 300
7.	MAGNESIUM, TOTAL p	264		SW846 6010C
8.	pH-FIELD (SU) p	6.94		FIELD
9.	pH-LAB (SU) p	7.12		150.1/4500B
10.	POTASSIUM, TOTAL p	1650		SW846 6010C
11.	SPEC. COND., FIELD (umhos/cm) p	62200		FIELD
12.	SPEC. COND., LAB (umhos/cm) p	61100		EPA 120.1
13.	SODIUM, TOTAL p	1980		SW846 6010C
14.	SULFATE p	162		EPA 300
15.	TOC (TOTAL ORGANIC CARBON) p	370		SM20-5310B
16.	FLUORIDE p	1 ND		EPA 300
17.	IRON, TOTAL p	10.3		SW846 6010C
18.	MANGANESE, TOTAL p	1.5		SW846 6010C
19.	NITRATE-NITROGEN p	1 ND		EPA 300

T - Please indicate detection limit if analyte is not detected

Monitoring Point No. FFLEINFSSample Date 8/28/2019I.D. No 101389**FORM 50**

ANALYTE mg/l unless otherwise indicated		LEACHATE DISCHARGE	DETECTION ZONE DISCHARGE	ANALYSIS METHOD NUMBER
20.	TOTAL PHENOLICS (mg/l) p	0.05		SW846 9066
21.	TDS (TOT. DISSOLVED SOLIDS) (mg/l) p	40900		SM20-2540C
22.	TRITIUM (pCi/l) p			EPA 906
23.	TURBIDITY (NTU) p	152		SM20-2130B
24.	ANTIMONY (ug/l) p	51		SW846 6010C
25.	ARSENIC, TOTAL (ug/l) p	34		EPA 200.7
26.	BARIUM, TOTAL (ug/l) p	5400		EPA 200.7
27.	BERYLLIUM (ug/l) p	44 ND		SW846 6010C
28.	CADMIUM, TOTAL (ug/l) p	20		EPA 200.7
29.	CHROMIUM, TOTAL (ug/l) p	16		EPA 200.7
30.	COBALT (ug/l) p	8.2		SW846 6010C
31.	COPPER, TOTAL (ug/l) p	18		EPA 200.7
32.	LEAD-FLAMELESS, TOTAL (ug/l) p	6.7 ND		EPA 200.7
33.	MERCURY, TOTAL (ug/l) p	0.5 ND		EPA 245.1
34.	NICKEL (ug/l) p	61		EPA 200.7
35.	SELENIUM, TOTAL (ug/l) p	22 ND		EPA 200.7
36.	SILVER, TOTAL (ug/l) p	4.4 ND		EPA 200.7
37.	THALLIUM (ug/l) p	22 ND		SW846 6010C
38.	VANADIUM (ug/l) p	5.6 ND		SW846 6010C
39.	ZINC, TOTAL (ug/l) p	170		EPA 200.7
40.	ACETONE (ug/l) p	265		SW 846 8260B
41.	ACRYLONITRILE (ug/l) p	25 ND		SW 846 8260B
42.	BENZENE (ug/l) p	5 ND		SW 846 8260B
43.	BROMOCHLOROMETHANE (CHLOROBR p	5 ND		SW 846 8260B
44.	BROMODICHLOROMETHANE (ug/l) p	5 ND		SW 846 8260B
45.	BROMOFORM (ug/l) p	5 ND		SW 846 8260B
46.	CARBON DISULFIDE (ug/l) p	5 ND		SW 846 8260B
47.	CARBON TETRACHLORIDE (ug/l) p	5 ND		SW 846 8260B
48.	CHLOROBENZENE (ug/l) p	5 ND		SW 846 8260B
49.	CHLOROETHANE (ug/l) p	5 ND		SW 846 8260B
50.	CHLOROFORM (ug/l) p	5 ND		SW 846 8260B
51.	3-CHLORO-1-PROPENE (ug/l) p	5 ND		SW 846 8260B
52.	DIBROMOCHLOROMETHANE (ug/l) p	5 ND		SW 846 8260B
53.	1,2-DIBROMO-3-CHLOROPROPANE (ug/l) p	35 ND		SW 846 8260B
54.	1,2-DIBROMOETHANE (ug/l) p	5 ND		SW 846 8260B
55.	1,2-DICHLOROBENZENE (ug/l) p	5 ND		SW 846 8260B
56.	1,3-DICHLOROBENZENE (ug/l) p	5 ND		SW 846 8260B

T - Please indicate detection limit if analyte is not detected

Monitoring Point No. FFLEINFSSample Date 8/28/2019I.D. No. 101389**FORM 50**

ANALYTE ug/l			LEACHATE DISCHARGE ^T	DETECTION ZONE DISCHARGE ^T	ANALYSIS METHOD NUMBER
57.	1,4-DICHLOROENZENE	p	5 ND		SW 846 8260B
58.	TRANS 1,4-DICHLORO-2-BUTENE	p	15 ND		SW 846 8260B
59.	DICHLORODIFLUOROMETHANE	p	5 ND		SW 846 8260B
60.	1,1-DICHLOROETHANE	p	5 ND		SW 846 8260B
61.	1,2-DICHLOROETHANE	p	5 ND		SW 846 8260B
62.	1,1-DICHLOROETHENE	p	5 ND		SW 846 8260B
63.	CIS 1,2-DICHLOROETHENE	p	5 ND		SW 846 8260B
64.	TRANS 1,2-DICHLOROETHENE	p	5 ND		SW 846 8260B
65.	1,2-DICHLOROPROPANE	p	5 ND		SW 846 8260B
66.	CIS 1,3-DICHLOROPROPENE	p	5 ND		SW 846 8260B
67.	TRANS 1,3-DICHLOROPROPENE	p	5 ND		SW 846 8260B
68.	ETHYLBENZENE	p	5 ND		SW 846 8260B
69.	2-HEXANONE	p	25 ND		SW 846 8260B
70.	BROMOMETHANE	p	5 ND		SW 846 8260B
71.	CHLOROMETHANE	p	5 ND		SW 846 8260B
72.	DIBROMOMETHANE	p	5 ND		SW 846 8260B
73.	METHYLENE CHLORIDE	p	5 ND		SW 846 8260B
74.	2-BUTANONE (MEK)	p	71.8		SW 846 8260B
75.	IODOMETHANE	p	5 ND		SW 846 8260B
76.	4-METHYL-2-PENTANONE	p	25 ND		SW 846 8260B
77.	STYRENE	p	5 ND		SW 846 8260B
78.	1,1,2,2-TETRACHLOROETHANE	p	5 ND		SW 846 8260B
79.	1,1,1,2-TETRACHLOROETHANE	p	5 ND		SW 846 8260B
80.	TETRACHLOROETHENE	p	5 ND		SW 846 8260B
81.	TOLUENE	p	5 ND		SW 846 8260B
82.	1,1,1-TRICHLOROETHANE	p	5 ND		SW 846 8260B
83.	1,1,2-TRICHLOROETHANE	p	5 ND		SW 846 8260B
84.	TRICHLOROETHENE	p	5 ND		SW 846 8260B

T - Please indicate detection limit if analyte is not detected

Monitoring Point No. FFLEINFSSample Date 8/28/2019I.D. No. 101389**FORM 50**

ANALYTE ug/l			LEACHATE DISCHARGE	T	DETECTION ZONE DISCHARGE	T	ANALYSIS METHOD NUMBER
85.	TRICHLOROFLUOROMETHANE	p	5 ND				SW 846 8260B
86.	1,2,3-TRICHLOROPROPANE	p	10 ND				SW 846 8260B
87.	VINYL ACETATE	p	25 ND				SW 846 8260B
88.	VINYL CHLORIDE	p	5 ND				SW 846 8260B
89.	XYLENES (TOTAL)	p	15 ND				SW 846 8260B

p = PADEP 273,284 analyte exclusively
d = Subtitle D, Appendix I analyte exclusively
All other analytes are common to both lists.

T - Please indicate detection limit if analyte is not detected

Analyzed in the 4th calendar quarter only

FORM 50

Monitoring Point No.	FFLEINFS
Sample Date	8/28/2019
I.D. No	101389

4. Qualitatively Identified Organic Compounds

List at least ten volatile organic compounds not otherwise identified in this section. Their identification should be based upon those compounds showing the greatest apparent concentration from the peaks of a mass spectrum of each sample. These ten compounds shall be identified but the concentration of each is not required.

<u>Constituent</u>	<u>CAS Number</u>
DIHYDRO-TERPINEOL	0-00-0
BENZOIC ACID, 2-TRIMETHYL	3789-85-3
2,4-DIMETHYL-3-PENTANONE	565-80-0
T-BUTYL ALCOHOL	75-65-0

September 9, 2019

Ms. Jordan Gallagher
Lancaster County Solid Waste Authority
1299 Hbg Pike, P.O. Box 4425
Lancaster, PA 17604

Certificate of Analysis

Project Name:	FREY FARM	Workorder:	3054578
Purchase Order:	PO1000126	Workorder ID:	FFLEINFS

Dear Ms. Gallagher:

Enclosed are the analytical results for samples received by the laboratory on Wednesday, August 28, 2019.

The ALS Environmental laboratory in Middletown, Pennsylvania is a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory and as such, certifies that all applicable test results meet the requirements of NELAP.

If you have any questions regarding this certificate of analysis, please contact Ms. Susan J Scherer (Project Coordinator) at (717) 944-5541.

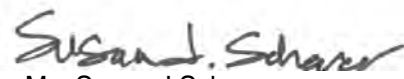
Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications section of the ALS website at www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads.

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ALS Spring City: 10 Riverside Drive, Spring City, PA 19475 610-948-4903

CC: Mr. Nicholas Rogers , Mr. Daniel Brown , Mr. Jeff Musser

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.


Ms. Susan J Scherer
Project Coordinator

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SAMPLE SUMMARY

Workorder: 3054578 FFLEINFS

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
3054578001	FFLEINFS	Water	8/28/2019 14:10	8/28/2019 17:56	Mr. Jeff Musser

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SAMPLE SUMMARY

Workorder: 3054578 FFLEINFS

Notes

- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 - Field Services Sampling Plan).
- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
- The Chain of Custody document is included as part of this report.
- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are performed in the laboratory and are therefore analyzed out of hold time.
- Method references listed on this report beginning with the prefix "S" followed by a method number (such as S2310B-97) refer to methods from "Standard Methods for the Examination of Water and Wastewater".
- For microbiological analyses, the "Prepared" value is the date/time into the incubator and the "Analyzed" value is the date/time out the incubator.
- An Analysis-Prep Method Cross Reference Table is included after Analytical Results & Qualifiers section in this report.

Standard Acronyms/Flags

J	Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
U	Indicates that the analyte was Not Detected (ND)
N	Indicates presumptive evidence of the presence of a compound
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RDL	Reporting Detection Limit
ND	Not Detected - indicates that the analyte was Not Detected at the RDL
Cntr	Analysis was performed using this container
RegLmt	Regulatory Limit
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
%Rec	Percent Recovery
RPD	Relative Percent Difference
LOD	DoD Limit of Detection
LOQ	DoD Limit of Quantitation
DL	DoD Detection Limit
I	Indicates reported value is greater than or equal to the Method Detection Limit (MDL) but less than the Report Detection Limit (RDL)
(S)	Surrogate Compound
NC	Not Calculated
*	Result outside of QC limits

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ANALYTICAL RESULTS

Workorder: 3054578 FFLEINFS

Lab ID: **3054578001**

Date Collected: 8/28/2019 14:10

Matrix: Water

Sample ID: **FFLEINFS**

Date Received: 8/28/2019 17:56

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	265		ug/L	50.0	SW846 8260B			9/4/19 13:24	TMP	J
Acrylonitrile	ND		ug/L	25.0	SW846 8260B			9/4/19 13:24	TMP	J
Benzene	ND		ug/L	5.0	SW846 8260B			9/4/19 13:24	TMP	J
Bromochloromethane	ND		ug/L	5.0	SW846 8260B			9/4/19 13:24	TMP	J
Bromodichloromethane	ND		ug/L	5.0	SW846 8260B			9/4/19 13:24	TMP	J
Bromoform	ND		ug/L	5.0	SW846 8260B			9/4/19 13:24	TMP	J
Bromomethane	ND		ug/L	5.0	SW846 8260B			9/4/19 13:24	TMP	J
2-Butanone	71.8		ug/L	50.0	SW846 8260B			9/4/19 13:24	TMP	J
Carbon Disulfide	ND		ug/L	5.0	SW846 8260B			9/4/19 13:24	TMP	J
Carbon Tetrachloride	ND		ug/L	5.0	SW846 8260B			9/4/19 13:24	TMP	J
Chlorobenzene	ND		ug/L	5.0	SW846 8260B			9/4/19 13:24	TMP	J
Chlorodibromomethane	ND		ug/L	5.0	SW846 8260B			9/4/19 13:24	TMP	J
Chloroethane	ND		ug/L	5.0	SW846 8260B			9/4/19 13:24	TMP	J
Chloroform	ND		ug/L	5.0	SW846 8260B			9/4/19 13:24	TMP	J
Chloromethane	ND		ug/L	5.0	SW846 8260B			9/4/19 13:24	TMP	J
3-Chloro-1-propene	ND		ug/L	5.0	SW846 8260B			9/4/19 13:24	TMP	J
1,2-Dibromo-3-chloropropane	ND		ug/L	35.0	SW846 8260B			9/4/19 13:24	TMP	J
1,2-Dibromoethane	ND		ug/L	5.0	SW846 8260B			9/4/19 13:24	TMP	J
Dibromomethane	ND		ug/L	5.0	SW846 8260B			9/4/19 13:24	TMP	J
trans-1,4-Dichloro-2-butene	ND		ug/L	15.0	SW846 8260B			9/4/19 13:24	TMP	J
1,2-Dichlorobenzene	ND		ug/L	5.0	SW846 8260B			9/4/19 13:24	TMP	J
1,3-Dichlorobenzene	ND		ug/L	5.0	SW846 8260B			9/4/19 13:24	TMP	J
1,4-Dichlorobenzene	ND		ug/L	5.0	SW846 8260B			9/4/19 13:24	TMP	J
Dichlorodifluoromethane	ND		ug/L	5.0	SW846 8260B			9/4/19 13:24	TMP	J
1,1-Dichloroethane	ND		ug/L	5.0	SW846 8260B			9/4/19 13:24	TMP	J
1,2-Dichloroethane	ND		ug/L	5.0	SW846 8260B			9/4/19 13:24	TMP	J
1,1-Dichloroethene	ND		ug/L	5.0	SW846 8260B			9/4/19 13:24	TMP	J
cis-1,2-Dichloroethene	ND		ug/L	5.0	SW846 8260B			9/4/19 13:24	TMP	J
trans-1,2-Dichloroethene	ND		ug/L	5.0	SW846 8260B			9/4/19 13:24	TMP	J
1,2-Dichloropropane	ND		ug/L	5.0	SW846 8260B			9/4/19 13:24	TMP	J
cis-1,3-Dichloropropene	ND		ug/L	5.0	SW846 8260B			9/4/19 13:24	TMP	J
trans-1,3-Dichloropropene	ND		ug/L	5.0	SW846 8260B			9/4/19 13:24	TMP	J
Ethylbenzene	ND		ug/L	5.0	SW846 8260B			9/4/19 13:24	TMP	J
2-Hexanone	ND		ug/L	25.0	SW846 8260B			9/4/19 13:24	TMP	J
Iodomethane	ND		ug/L	5.0	SW846 8260B			9/4/19 13:24	TMP	J
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	25.0	SW846 8260B			9/4/19 13:24	TMP	J

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ANALYTICAL RESULTS

Workorder: 3054578 FFLEINFS

 Lab ID: **3054578001**

Date Collected: 8/28/2019 14:10

Matrix: Water

 Sample ID: **FFLEINFS**

Date Received: 8/28/2019 17:56

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Methylene Chloride	ND		ug/L	5.0	SW846 8260B			9/4/19 13:24	TMP	J
Styrene	ND		ug/L	5.0	SW846 8260B			9/4/19 13:24	TMP	J
1,1,1,2-Tetrachloroethane	ND		ug/L	5.0	SW846 8260B			9/4/19 13:24	TMP	J
1,1,2,2-Tetrachloroethane	ND		ug/L	5.0	SW846 8260B			9/4/19 13:24	TMP	J
Tetrachloroethene	ND		ug/L	5.0	SW846 8260B			9/4/19 13:24	TMP	J
Toluene	ND		ug/L	5.0	SW846 8260B			9/4/19 13:24	TMP	J
Total Xylenes	ND		ug/L	15.0	SW846 8260B			9/4/19 13:24	TMP	J
1,1,1-Trichloroethane	ND		ug/L	5.0	SW846 8260B			9/4/19 13:24	TMP	J
1,1,2-Trichloroethane	ND		ug/L	5.0	SW846 8260B			9/4/19 13:24	TMP	J
Trichloroethene	ND		ug/L	5.0	SW846 8260B			9/4/19 13:24	TMP	J
Trichlorofluoromethane	ND		ug/L	5.0	SW846 8260B			9/4/19 13:24	TMP	J
1,2,3-Trichloropropane	ND		ug/L	10.0	SW846 8260B			9/4/19 13:24	TMP	J
Vinyl Acetate	ND		ug/L	25.0	SW846 8260B			9/4/19 13:24	TMP	J
Vinyl Chloride	ND		ug/L	5.0	SW846 8260B			9/4/19 13:24	TMP	J
o-Xylene	ND		ug/L	5.0	SW846 8260B			9/4/19 13:24	TMP	J
mp-Xylene	ND		ug/L	10.0	SW846 8260B			9/4/19 13:24	TMP	J
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	101		%	62 - 133	SW846 8260B			9/4/19 13:24	TMP	J
4-Bromofluorobenzene (S)	108		%	79 - 114	SW846 8260B			9/4/19 13:24	TMP	J
Dibromofluoromethane (S)	98.7		%	78 - 116	SW846 8260B			9/4/19 13:24	TMP	J
Toluene-d8 (S)	96.2		%	76 - 127	SW846 8260B			9/4/19 13:24	TMP	J
Library Search - Volatiles										
2-Propanol, 2-methyl-	20.3	J N	ug/L		SW846 8260B			9/4/19 13:24	TMP	J
SILANOL, TERT-BUTYLDIMETHYL-	68.6	J N	ug/L		SW846 8260B			9/4/19 13:24	TMP	J
3-Pentanone, 2,4-dimethyl-	6.8	J N	ug/L		SW846 8260B			9/4/19 13:24	TMP	J
Unknown	31.1	J	ug/L		SW846 8260B			9/4/19 13:24	TMP	J
Benzoic acid, 2-[(trimethylsil	26.0	J N	ug/L		SW846 8260B			9/4/19 13:24	TMP	J
WET CHEMISTRY										
Alkalinity, Bicarbonate	487		mg/L	5	SM2320B-2011			8/31/19 10:16	MBW	B
Alkalinity, Total	487	4	mg/L	5	SM2320B-2011			8/31/19 10:16	MBW	B
Ammonia-N	1690		mg/L	10.0	D6919-09			9/7/19 19:04	AK	F
Chemical Oxygen Demand (COD)	3120		mg/L	75	EPA 410.4			9/6/19 17:22	AK	F
Chloride	19400		mg/L	500	EPA 300.0			8/31/19 12:00	CHW	B
Fluoride	ND	2	mg/L	1.0	EPA 300.0			8/29/19 14:25	CHW	B
Nitrate-N	ND	3	mg/L	1.0	EPA 300.0			8/29/19 14:25	CHW	B
pH	7.12	1	pH_Units		S4500HB-11			8/31/19 10:16	MBW	B

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ANALYTICAL RESULTS

Workorder: 3054578 FFLEINFS

Lab ID: **3054578001**

Date Collected: 8/28/2019 14:10

Matrix: Water

Sample ID: **FFLEINFS**

Date Received: 8/28/2019 17:56

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Phenolics	0.05		mg/L	0.005	SW846 9066	8/30/19 13:05	C_D	9/2/19 05:55	C_D	H
Specific Conductance	61100		umhos/cm	1	SW846 9050A			8/31/19 10:16	MBW	B
Sulfate	162		mg/L	10.0	EPA 300.0			8/29/19 14:25	CHW	B
Total Dissolved Solids	40900		mg/L	5	S2540C-11			9/3/19 14:42	D1C	B
Total Organic Carbon (TOC)	370		mg/L	50.0	SW846 9060A			8/31/19 18:57	PAG	C
Turbidity	152		NTU	0.10	SM2130B-2011			8/29/19 06:08	R2B	B
METALS										
Antimony, Total	0.051		mg/L	0.022	SW846 6010C	8/30/19 15:15	AHI	9/3/19 16:37	SRT	G
Arsenic, Total	0.034		mg/L	0.0090	SW846 6010C	8/30/19 15:15	AHI	9/3/19 16:37	SRT	G
Barium, Total	5.4		mg/L	0.011	SW846 6010C	8/30/19 15:15	AHI	9/3/19 16:37	SRT	G
Beryllium, Total	ND		mg/L	0.044	SW846 6010C	8/30/19 15:15	AHI	9/6/19 14:04	MNP	G
Cadmium, Total	0.020		mg/L	0.0022	SW846 6010C	8/30/19 15:15	AHI	9/3/19 16:37	SRT	G
Calcium, Total	1640		mg/L	0.11	SW846 6010C	8/30/19 15:15	AHI	9/3/19 16:37	SRT	G
Chromium, Total	0.016		mg/L	0.0056	SW846 6010C	8/30/19 15:15	AHI	9/3/19 16:37	SRT	G
Cobalt, Total	0.0082		mg/L	0.0056	SW846 6010C	8/30/19 15:15	AHI	9/3/19 16:37	SRT	G
Copper, Total	0.018		mg/L	0.011	SW846 6010C	8/30/19 15:15	AHI	9/3/19 16:37	SRT	G
Iron, Total	10.3		mg/L	0.067	SW846 6010C	8/30/19 15:15	AHI	9/3/19 16:37	SRT	G
Lead, Total	ND		mg/L	0.0067	SW846 6010C	8/30/19 15:15	AHI	9/3/19 16:37	SRT	G
Magnesium, Total	264		mg/L	0.11	SW846 6010C	8/30/19 15:15	AHI	9/3/19 16:37	SRT	G
Manganese, Total	1.5		mg/L	0.0056	SW846 6010C	8/30/19 15:15	AHI	9/3/19 16:37	SRT	G
Mercury, Total	ND		mg/L	0.00050	SW846 7470A	8/30/19 11:05	AHI	8/31/19 05:25	MSA	G
Nickel, Total	0.061		mg/L	0.022	SW846 6010C	8/30/19 15:15	AHI	9/3/19 16:37	SRT	G
Potassium, Total	1650		mg/L	0.56	SW846 6010C	8/30/19 15:15	AHI	9/3/19 16:37	SRT	G
Selenium, Total	ND		mg/L	0.022	SW846 6010C	8/30/19 15:15	AHI	9/3/19 16:37	SRT	G
Silver, Total	ND		mg/L	0.0044	SW846 6010C	8/30/19 15:15	AHI	9/3/19 16:37	SRT	G
Sodium, Total	1980		mg/L	0.56	SW846 6010C	8/30/19 15:15	AHI	9/3/19 16:37	SRT	G
Thallium, Total	ND		mg/L	0.022	SW846 6010C	8/30/19 15:15	AHI	9/3/19 16:37	SRT	G
Vanadium, Total	ND		mg/L	0.0056	SW846 6010C	8/30/19 15:15	AHI	9/3/19 16:37	SRT	G
Zinc, Total	0.17		mg/L	0.022	SW846 6010C	8/30/19 15:15	AHI	9/3/19 16:37	SRT	G
FIELD PARAMETERS										
pH, Field (SM4500B)	6.94		pH_Units		Field			8/28/19 14:10	CLT	A
Specific Conductance, Field	62200		umhos/cm	1	Field			8/28/19 14:10	CLT	A
Temperature	24.20		Deg. C		Field			8/28/19 14:10	CLT	A

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ANALYTICAL RESULTS

Workorder: 3054578 FFLEINFS

Lab ID: **3054578001**

Date Collected: 8/28/2019 14:10

Matrix: Water

Sample ID: **FFLEINFS**

Date Received: 8/28/2019 17:56

Parameters	Results	Flag	Units	RDL	Method	Prepared By	Analyzed By	Cntr
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Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3054578 FFLEINFS

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
3054578001	1	FFLEINFS	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
3054578001	2	FFLEINFS	EPA 300.0	Fluoride
Due to sample matrix interferences, this analyte was analyzed at a dilution and the detection levels adjusted accordingly.				
3054578001	3	FFLEINFS	EPA 300.0	Nitrate-N
Due to sample matrix interferences, this analyte was analyzed at a dilution and the detection levels adjusted accordingly.				
3054578001	4	FFLEINFS	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				

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ANALYSIS - PREP METHOD CROSS REFERENCE TABLE

Workorder: 3054578 FFLEINFS

Lab ID	Sample ID	Analysis Method	Prep Method
3054578001	FFLEINFS	D6919-09	
3054578001	FFLEINFS	EPA 300.0	
3054578001	FFLEINFS	EPA 410.4	
3054578001	FFLEINFS	Field	
3054578001	FFLEINFS	Lib Search VOC	
3054578001	FFLEINFS	S2540C-11	
3054578001	FFLEINFS	S4500HB-11	
3054578001	FFLEINFS	SM2130B-2011	
3054578001	FFLEINFS	SM2320B-2011	
3054578001	FFLEINFS	SW846 6010C	SW846 3015
3054578001	FFLEINFS	SW846 7470A	SW846 7470A
3054578001	FFLEINFS	SW846 8260B	
3054578001	FFLEINFS	SW846 9050A	
3054578001	FFLEINFS	SW846 9060A	
3054578001	FFLEINFS	SW846 9066	420.4/9066

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34-Dogwood Lane
Middletown, PA 17057
P. 717-944-5541
F. 717-944-1430

Environmental

CHAIN OF CUSTODY / REQUEST FOR ANALYSIS
ALL SHADED AREAS MUST BE COMPLETED BY THE CLIENT / SAMPLER. INSTRUCTIONS ON THE BACK.



Client Name: Lancaster County Solid Waste Mgmt Authority		Container Type	PL	PL	PL	PL	AW	AG	CG	Cooler Temp: <u>16</u> Therm ID: <u>102</u>	No. of Coolers: Y <input type="checkbox"/> N <input type="checkbox"/>		
Address: 1299 Harrisburg Pike Lancaster PA 17604		Container Size	500 mL	250 ml	125 ml	125 ml	40mL	40mL	40mL			Custody Seals Present? <input type="checkbox"/>	
Contact: Mr. Nick Rogers		Preservative	NONE	H2SO4	HNO3	H2SO4	HCl	HCl	HCl	(if present) Seals Intact? <input type="checkbox"/>			
Phone#: (717) 874-4428		ANALYSES/METHOD REQUESTED											
Project Name#: FFLF Leachate Combined Form 50-FFLEINFS		Enter Number of Containers Per Sample or Field Results Below.											
Bill To: LCSWMA		Alkalinity, Bicarbonate											
TAT <input checked="" type="checkbox"/> Normal-Standard TAT is 10-12 business days.		Cl, pH, SpC, SO4, F, NO3, TDS, TB											
Date Required: <input checked="" type="checkbox"/> Rush-Subject to ALS approval and surcharges.		NH3, COD											
Email? <input checked="" type="checkbox"/> -Y <u>nrorgers@lcswwa.org</u> Approved By: _____		Total Metals-Form 50*											
Fax? <input type="checkbox"/> -Y No: _____		Phenols, Total											
Sample Description/Location (as it will appear on the lab report)		8260-Form 50 + Library Search											
1) FFLEINFS	Sample Date	8/28/2019	Time	14:10	C	WW	1	1	2	2	2	24.2	
2												62.200	
3												6.94	
4													
5													
6													
7													
8													
9													
10													
Project Comments: Form 50: Metals = Mg, K, Na, Fe, Mn, Sb, As, Ba, Be, Cd, Cr, Co, Cu, Pb, Hg, Ni, Se, Ag, Ti, V, Zn		ALS Field Services: <input type="checkbox"/> Pickup <input type="checkbox"/> Rental Eq <input type="checkbox"/> Composite Sampling <input type="checkbox"/> Other: _____											
LOGGED BY (signature): _____		Date		Time		Received By / Company Name		Date		Time		Special Processing	
REVIEWED BY (signature): _____		8-28-19		1547		2 Rogers		8-28-19		1547		USACE	
		8-28-19		1700		ALS		8-28-19		1756		Navy	
												Sample Disposal	
												Lab <input checked="" type="checkbox"/>	
												Special <input type="checkbox"/>	
												Reportable to PADEP? Yes <input type="checkbox"/>	
												PWSID # _____	
												EDDS: Format Type: _____	

*G=Grab, C=Composite **Matrix - Al=Air, DW=Drinking Water, GW=Groundwater, OL=Oil, Other Liquid, SL=Sludge, SO=Soil, WP=Wipe, WW=Wastewater
ALS ENVIRONMENTAL SHIPPING ADDRESS: 34 DOGWOOD LANE, MIDDLETOWN, PA 17057



301 Fulling Mill Road
 Middletown, PA 17057
 P: (717) 944-5541
 F: (717) 944-1430

Condition of Sample Receipt Form

Client: LCSW Work Order #: 3054578 Initials: DN Date: 8/24

- | | | | |
|--|--------------------------------------|-----|-------------------------------------|
| 1. Were airbills / tracking numbers present and recorded?..... | <input type="radio"/> NONE | YES | NO |
| Tracking number: _____ | | | |
| 2. Are Custody Seals on shipping containers intact?..... | <input type="radio"/> NONE | YES | NO |
| 3. Are Custody Seals on sample containers intact?..... | <input type="radio"/> NONE | YES | NO |
| 4. Is there a COC (Chain-of-Custody) present?..... | <input checked="" type="radio"/> YES | YES | NO |
| 5. Are the COC and bottle labels complete, legible and in agreement?..... | <input checked="" type="radio"/> YES | YES | NO |
| 5a. Does the COC contain sample locations?..... | <input checked="" type="radio"/> YES | YES | NO |
| 5b. Does the COC contain date and time of sample collection for all samples?..... | <input checked="" type="radio"/> YES | YES | NO |
| 5c. Does the COC contain sample collectors name?..... | <input checked="" type="radio"/> YES | YES | NO |
| 5d. Does the COC note the type(s) of preservation for all bottles?..... | <input checked="" type="radio"/> YES | YES | NO |
| 5e. Does the COC note the number of bottles submitted for each sample?..... | <input checked="" type="radio"/> YES | YES | NO |
| 5f. Does the COC note the type of sample, composite or grab?..... | <input checked="" type="radio"/> YES | YES | NO |
| 5g. Does the COC note the matrix of the sample(s)?..... | <input checked="" type="radio"/> YES | YES | NO |
| 6. Are all aqueous samples requiring preservation preserved correctly?..... | <input checked="" type="radio"/> N/A | YES | NO |
| 7. Were all samples placed in the proper containers for the requested analyses, with sufficient volume?..... | <input checked="" type="radio"/> YES | YES | NO |
| 8. Are all samples within holding times for the requested analyses?..... | <input checked="" type="radio"/> YES | YES | <input checked="" type="radio"/> NO |
| 9. Were all sample containers received intact and headspace free when required? (not broken, leaking, frozen, etc.)..... | <input checked="" type="radio"/> YES | YES | NO |
| 10. Did we receive trip blanks (applies only for methods EPA 504, EPA 524.2 and 1631 E (LL Hg)?..... | <input type="radio"/> N/A | YES | NO |
| 11. Were the samples received on ice?..... | <input checked="" type="radio"/> YES | YES | NO |
| 12. Were sample temperatures measured at 0.0-6.0°C..... | <input checked="" type="radio"/> YES | YES | <input checked="" type="radio"/> NO |
| 13. Are the samples DW matrix? If YES, fill out Reportable Drinking Water questions below..... | <input checked="" type="radio"/> YES | YES | <input checked="" type="radio"/> NO |
| 13a. Are the samples required for SDWA compliance reporting?..... | N/A | YES | NO |
| 13b. Did the client provide a SDWA PWS ID#?..... | N/A | YES | NO |
| 13c. Are all aqueous unpreserved SDWA samples pH 5-9?..... | N/A | YES | NO |
| 13d. Did the client provide the SDWA sample location ID/Description?..... | N/A | YES | NO |
| 13e. Did the client provide the SDWA sample type (D, E, R, C, P, S)?..... | N/A | YES | NO |

Cooler #: _____
 Temperature (°C): 10
 Thermometer ID: 402
 Radiological (µCi): _____

COMMENTS (Required for all NO responses above and any sample non-conformance):
 -> Temp > 6°
 - Same day
 -> PH 3 out of hold





**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT**

Date Prepared/Revised 10/17/2019
DEP USE ONLY
Date Received

**FORM 50
MUNICIPAL WASTE LANDFILL
LEACHATE ANALYSES**

This form must be fully and accurately completed. All required information must be typed or legibly printed in the spaces provided. If additional space is necessary, identify each attached sheet as Form 50, reference the item number and identify the date prepared. The "date prepared/revised" on any attached sheets needs to match the "date prepared/revised" on this page.

General Reference: Section 273.255(d) and (e) and 273.276(a)
Federal Regulations, Subtitle D: 258.54 and Appendix I to Part 258.

SECTION A. SITE IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Management Aut
Site Name: Frey Farm Landfill
Facility ID (as issued by DEP): 101389

SECTION B. FACILITY INFORMATION

Facility Name: Frey Farm Landfill
 Sampling Point Number: FFMH01SS
 Location: County Lancaster County Municipality: _____
 Sampling Point Latitude: 0 ° 0 ' _____ " Longitude: 0 ° 0 ' _____ "
 Sampling Method: Pumped Bailed Grab
 Sample Field Filtered (must be 0.45 micron): Yes No
 Sample Date (mm/dd/yy): 8/29/2019 Sample Collection Time: 10:05
 Sample Collector's Name: Collected by Cli
 Sample Collector's Affiliation: LCSWMA
 Laboratory(ies) Performing Analysis: ALS Environmental
 Lab Certification Number(s): 22-293
 Lab Sample Number(s): 3054916001 Final Lab Analysis Completion Date: 9/11/2019
 Were any holding times exceeded?: Yes No If yes, please explain in comments field.
 Name/Affiliation of Person who Filled Out Form: Nick R. Rogers

Comments:

**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT**

Monitoring Point No. FFMH01SS
Sample Date 8/29/2019
I.D. No 101389

**FORM 50
QUARTERLY MUNICIPAL WASTE LANDFILL
LEACHATE ANALYSES**

For new facilities and cells as well as existing facilities which were permitted and which received waste after April 9, 1988, discharge flow volume from leachate collection shall be measured daily [273.276(a)(1)]. Discharge flow volume from the detection zone shall be estimated weekly [273.255(d)(2)]. Form 50 is due quarterly after the flow of leachate from the collection system has started. For facilities or cells which have received no waste since April 9, 1988, detection zone monitoring will meet permit/closure requirements.

FLOW FACTOR	LEACHATE DISCHARGE	DETECTION ZONE DISCHARGE
Volume (average gpd)		76.2
Area Drained (acres)		17.55
Ratio (gallons/acre/day)		4.34

Once leachate flow begins from a leachate collection system, leachate discharge will be analyzed quarterly for all analytes listed below. In the leachate detection zone, any fluid found in any detection zone monitoring point must be sampled during the initial four quarters for the leachate indicator parameters (designated by *, below) to establish a baseline fluid composition. Thereafter, any fluid detected in each monitoring point in the leachate detection zone must be sampled annually for the leachate indicator parameters. Quarterly sampling of the fluid in any detection zone monitoring point for leachate indicator parameters is required only when the quarterly flow at that monitoring point exceeds 10 gallons per acre per day (weekly average for the quarter) for the cell(s) served by that monitoring point. If the indicator analytes confirm leachate contamination in the detection zone, the fluid will be analyzed initially within 30 days and thereafter annually for all analytes listed below. When MCL's (where established) of any detection zone analytes on this form are exceeded, annual groundwater monitoring must include the Subtitle D detection zone add-on list analytes found on Form 19.

ANALYTE mg/l unless otherwise indicated	LEACHATE DISCHARGE	DETECTION ZONE DISCHARGE	ANALYSIS METHOD NUMBER
1. ALKALINITY p		440	SM20-2320B
2. AMMONIA-NITROGEN p		252	ASTM D6919-03
3. BICARBONATE ALKALINITY p		440	SM20-2321
4. CALCIUM, TOTAL p		4420	SW846 6010C
5. COD (CHEMICAL OXYGEN DEMAND) p		1100	EPA 410.4
6. CHLORIDE p		22700	EPA 300
7. MAGNESIUM, TOTAL p		453	SW846 6010C
8. pH-FIELD (SU) p		6.48	FIELD
9. pH-LAB (SU) p		6.47	150.1/4500B
10. POTASSIUM, TOTAL p		2140	SW846 6010C
11. SPEC. COND., FIELD (umhos/cm) p		46900	FIELD
12. SPEC. COND., LAB (umhos/cm) p		48300	EPA 120.1
13. SODIUM, TOTAL p		5830	SW846 6010C
14. SULFATE p		81.4	EPA 300
15. TOC (TOTAL ORGANIC CARBON) p		94.3	SM20-5310B
16. FLUORIDE p		1 ND	EPA 300
17. IRON, TOTAL p		236	SW846 6010C
18. MANGANESE, TOTAL p		8.1	SW846 6010C
19. NITRATE-NITROGEN p		1 ND	EPA 300

T - Please indicate detection limit if analyte is not detected

Monitoring Point No. FFMH01SS

Sample Date 8/29/2019

I.D. No 101389

FORM 50

ANALYTE mg/l unless otherwise indicated	LEACHATE DISCHARGE	DETECTION ZONE DISCHARGE	ANALYSIS METHOD NUMBER
20. TOTAL PHENOLICS (mg/l)	p	0.02	SW846 9066
21. TDS (TOT. DISSOLVED SOLIDS) (mg/l)	p	42200	SM20-2540C
22. TRITIUM (pCi/l)	p		EPA 906
23. TURBIDITY (NTU)	p	995	SM20-2130B
24. ANTIMONY (ug/l)	p	220 ND	SW846 6010C
25. ARSENIC, TOTAL (ug/l)	p	90 ND	EPA 200.7
26. BARIUM, TOTAL (ug/l)	p	2500	EPA 200.7
27. BERYLLIUM (ug/l)	p	44 ND	SW846 6010C
28. CADMIUM, TOTAL (ug/l)	p	23	EPA 200.7
29. CHROMIUM, TOTAL (ug/l)	p	56 ND	EPA 200.7
30. COBALT (ug/l)	p	56 ND	SW846 6010C
31. COPPER, TOTAL (ug/l)	p	110 ND	EPA 200.7
32. LEAD-FLAMELESS, TOTAL (ug/l)	p	67 ND	EPA 200.7
33. MERCURY, TOTAL (ug/l)	p	0.5 ND	EPA 245.1
34. NICKEL (ug/l)	p	220 ND	EPA 200.7
35. SELENIUM, TOTAL (ug/l)	p	220 ND	EPA 200.7
36. SILVER, TOTAL (ug/l)	p	44 ND	EPA 200.7
37. THALLIUM (ug/l)	p	220 ND	SW846 6010C
38. VANADIUM (ug/l)	p	56 ND	SW846 6010C
39. ZINC, TOTAL (ug/l)	p	220 ND	EPA 200.7
40. ACETONE (ug/l)	p	17.8	SW 846 8260B
41. ACRYLONITRILE (ug/l)	p	5 ND	SW 846 8260B
42. BENZENE (ug/l)	p	1.1	SW 846 8260B
43. BROMOCHLOROMETHANE (CHLOROBR	p	1 ND	SW 846 8260B
44. BROMODICHLOROMETHANE (ug/l)	p	1 ND	SW 846 8260B
45. BROMOFORM (ug/l)	p	1 ND	SW 846 8260B
46. CARBON DISULFIDE (ug/l)	p	1 ND	SW 846 8260B
47. CARBON TETRACHLORIDE (ug/l)	p	1 ND	SW 846 8260B
48. CHLOROBENZENE (ug/l)	p	1 ND	SW 846 8260B
49. CHLOROETHANE (ug/l)	p	1 ND	SW 846 8260B
50. CHLOROFORM (ug/l)	p	1 ND	SW 846 8260B
51. 3-CHLORO-1-PROPENE (ug/l)	p	1 ND	SW 846 8260B
52. DIBROMOCHLOROMETHANE (ug/l)	p	1 ND	SW 846 8260B
53. 1,2-DIBROMO-3-CHLOROPROPANE (ug/l)	p	7 ND	SW 846 8260B
54. 1,2-DIBROMOETHANE (ug/l)	p	1 ND	SW 846 8260B
55. 1,2-DICHLOROBENZENE (ug/l)	p	1 ND	SW 846 8260B
56. 1,3-DICHLOROBENZENE (ug/l)	p	1 ND	SW 846 8260B

T - Please indicate detection limit if analyte is not detected

Monitoring Point No.	FFMH01SS
Sample Date	8/29/2019
I.D. No	101389

FORM 50

ANALYTE ug/l			LEACHATE DISCHARGE	DETECTION ZONE DISCHARGE	ANALYSIS METHOD NUMBER
57.	1,4-DICHLOROBENZENE	p		1.9	SW 846 8260B
58.	TRANS 1,4-DICHLORO-2-BUTENE	p		3 ND	SW 846 8260B
59.	DICHLORODIFLUOROMETHANE	p		1 ND	SW 846 8260B
60.	1,1-DICHLOROETHANE	p		1 ND	SW 846 8260B
61.	1,2-DICHLOROETHANE	p		1 ND	SW 846 8260B
62.	1,1-DICHLOROETHENE	p		1 ND	SW 846 8260B
63.	CIS 1,2-DICHLOROETHENE	p		1 ND	SW 846 8260B
64.	TRANS 1,2-DICHLOROETHENE	p		1 ND	SW 846 8260B
65.	1,2-DICHLOROPROPANE	p		1 ND	SW 846 8260B
66.	CIS 1,3-DICHLOROPROPENE	p		1 ND	SW 846 8260B
67.	TRANS 1,3-DICHLOROPROPENE	p		1 ND	SW 846 8260B
68.	ETHYLBENZENE	p		4.1	SW 846 8260B
69.	2-HEXANONE	p		5 ND	SW 846 8260B
70.	BROMOMETHANE	p		1 ND	SW 846 8260B
71.	CHLOROMETHANE	p		1 ND	SW 846 8260B
72.	DIBROMOMETHANE	p		1 ND	SW 846 8260B
73.	METHYLENE CHLORIDE	p		1 ND	SW 846 8260B
74.	2-BUTANONE (MEK)	p		10 ND	SW 846 8260B
75.	IODOMETHANE	p		1 ND	SW 846 8260B
76.	4-METHYL-2-PENTANONE	p		5 ND	SW 846 8260B
77.	STYRENE	p		1 ND	SW 846 8260B
78.	1,1,2,2-TETRACHLOROETHANE	p		1 ND	SW 846 8260B
79.	1,1,1,2-TETRACHLOROETHANE	p		1 ND	SW 846 8260B
80.	TETRACHLOROETHENE	p		1 ND	SW 846 8260B
81.	TOLUENE	p		1 ND	SW 846 8260B
82.	1,1,1-TRICHLOROETHANE	p		1 ND	SW 846 8260B
83.	1,1,2-TRICHLOROETHANE	p		1 ND	SW 846 8260B
84.	TRICHLOROETHENE	p		1 ND	SW 846 8260B

T - Please indicate detection limit if analyte is not detected

Monitoring Point No. FFMH01SSSample Date 8/29/2019I.D. No. 101389**FORM 50**

ANALYTE ug/l		LEACHATE DISCHARGE	T	DETECTION ZONE DISCHARGE	T	ANALYSIS METHOD NUMBER
85.	TRICHLOROFLUOROMETHANE	p		1 ND		SW 846 8260B
86.	1,2,3-TRICHLOROPROPANE	p		2 ND		SW 846 8260B
87.	VINYL ACETATE	p		5 ND		SW 846 8260B
88.	VINYL CHLORIDE	p		1 ND		SW 846 8260B
89.	XYLENES (TOTAL)	p		6.5		SW 846 8260B

p = PADEP 273,284 analyte exclusively
d = Subtitle D, Appendix I analyte exclusively
All other analytes are common to both lists.

T - Please indicate detection limit if analyte is not detected

Analyzed in the 4th calendar quarter only

FORM 50

Monitoring Point No.	FFMH01SS
Sample Date	8/29/2019
I.D. No	101389

4. Qualitatively Identified Organic Compounds

List at least ten volatile organic compounds not otherwise identified in this section. Their identification should be based upon those compounds showing the greatest apparent concentration from the peaks of a mass spectrum of each sample. These ten compounds shall be identified but the concentration of each is not required.

<u>Constituent</u>	<u>CAS Number</u>
DIHYDRO-TERPINEOL	0-00-0



**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT**

Date Prepared/Revised 10/17/2019
DEP USE ONLY
Date Received

**FORM 50
MUNICIPAL WASTE LANDFILL
LEACHATE ANALYSES**

This form must be fully and accurately completed. All required information must be typed or legibly printed in the spaces provided. If additional space is necessary, identify each attached sheet as Form 50, reference the item number and identify the date prepared. The "date prepared/revised" on any attached sheets needs to match the "date prepared/revised" on this page.

General Reference: Section 273.255(d) and (e) and 273.276(a)
Federal Regulations, Subtitle D: 258.54 and Appendix I to Part 258.

SECTION A. SITE IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Management Aut
 Site Name: Frey Farm Landfill
 Facility ID (as issued by DEP): 101389

SECTION B. FACILITY INFORMATION

Facility Name: Frey Farm Landfill
 Sampling Point Number: FFMH03SS
 Location: County Lancaster County Municipality: _____
 Sampling Point Latitude: 0 ° 0 ' _____ " Longitude: 0 ° 0 ' _____ "
 Sampling Method: Pumped Bailed Grab
 Sample Field Filtered (must be 0.45 micron): Yes No
 Sample Date (mm/dd/yy): 8/29/2019 Sample Collection Time: 10:15
 Sample Collector's Name: Collected by Cli
 Sample Collector's Affiliation: LCSWMA
 Laboratory(ies) Performing Analysis: ALS Environmental
 Lab Certification Number(s): 22-293
 Lab Sample Number(s): 3054916002 Final Lab Analysis Completion Date: 9/10/2019
 Were any holding times exceeded?: Yes No If yes, please explain in comments field.
 Name/Affiliation of Person who Filled Out Form: Nick R. Rogers

Comments:

**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT**

Monitoring Point No.	FFMH03SS
Sample Date	8/29/2019
I.D. No	101389

**FORM 50
QUARTERLY MUNICIPAL WASTE LANDFILL
LEACHATE ANALYSES**

For new facilities and cells as well as existing facilities which were permitted and which received waste after April 9, 1988, discharge flow volume from leachate collection shall be measured daily [273.276(a)(1)]. Discharge flow volume from the detection zone shall be estimated weekly [273.255(d)(2)]. Form 50 is due quarterly after the flow of leachate from the collection system has started. For facilities or cells which have received no waste since April 9, 1988, detection zone monitoring will meet permit/closure requirements.

FLOW FACTOR	LEACHATE DISCHARGE	DETECTION ZONE DISCHARGE
Volume (average gpd)		2.94
Area Drained (acres)		17.69
Ratio (gallons/acre/day)		0.17

Once leachate flow begins from a leachate collection system, leachate discharge will be analyzed quarterly for all analytes listed below. In the leachate detection zone, any fluid found in any detection zone monitoring point must be sampled during the initial four quarters for the leachate indicator parameters (designated by *, below) to establish a baseline fluid composition. Thereafter, any fluid detected in each monitoring point in the leachate detection zone must be sampled annually for the leachate indicator parameters. Quarterly sampling of the fluid in any detection zone monitoring point for leachate indicator parameters is required only when the quarterly flow at that monitoring point exceeds 10 gallons per acre per day (weekly average for the quarter) for the cell(s) served by that monitoring point. If the indicator analytes confirm leachate contamination in the detection zone, the fluid will be analyzed initially within 30 days and thereafter annually for all analytes listed below. When MCL's (where established) of any detection zone analytes on this form are exceeded, annual groundwater monitoring must include the Subtitle D detection zone add-on list analytes found on Form 19.

ANALYTE mg/l unless otherwise indicated		LEACHATE DISCHARGE	DETECTION ZONE DISCHARGE	ANALYSIS METHOD NUMBER
1.	ALKALINITY	p	36	SM20-2320B
2.	AMMONIA-NITROGEN	p	104	ASTM D6919-03
3.	BICARBONATE ALKALINITY	p	36	SM20-2321
4.	CALCIUM, TOTAL	p	283	SW846 6010C
5.	COD (CHEMICAL OXYGEN DEMAND)	p	563	EPA 410.4
6.	CHLORIDE	p	3440	EPA 300
7.	MAGNESIUM, TOTAL	p	193	SW846 6010C
8.	pH-FIELD (SU)	p	5.78	FIELD
9.	pH-LAB (SU)	p	6.03	150.1/4500B
10.	POTASSIUM, TOTAL	p	267	SW846 6010C
11.	SPEC. COND., FIELD (umhos/cm)	p	10530	FIELD
12.	SPEC. COND., LAB (umhos/cm)	p	11300	EPA 120.1
13.	SODIUM, TOTAL	p	1700	SW846 6010C
14.	SULFATE	p	688	EPA 300
15.	TOC (TOTAL ORGANIC CARBON)	p	135	SM20-5310B
16.	FLUORIDE	p	1 ND	EPA 300
17.	IRON, TOTAL	p	1.8	SW846 6010C
18.	MANGANESE, TOTAL	p	2.9	SW846 6010C
19.	NITRATE-NITROGEN	p	195	EPA 300

T - Please indicate detection limit if analyte is not detected

Monitoring Point No. FFMH03SS

Sample Date 8/29/2019

I.D. No 101389

FORM 50

ANALYTE mg/l unless otherwise indicated	LEACHATE DISCHARGE	DETECTION ZONE DISCHARGE	ANALYSIS METHOD NUMBER
20. TOTAL PHENOLICS (mg/l)	p	0.005 ND	SW846 9066
21. TDS (TOT. DISSOLVED SOLIDS) (mg/l)	p	8560	SM20-2540C
22. TRITIUM (pCi/l)	p		EPA 906
23. TURBIDITY (NTU)	p	3.8	SM20-2130B
24. ANTIMONY (ug/l)	p	220 ND	SW846 6010C
25. ARSENIC, TOTAL (ug/l)	p	90 ND	EPA 200.7
26. BARIUM, TOTAL (ug/l)	p	200	EPA 200.7
27. BERYLLIUM (ug/l)	p	44 ND	SW846 6010C
28. CADMIUM, TOTAL (ug/l)	p	22 ND	EPA 200.7
29. CHROMIUM, TOTAL (ug/l)	p	56 ND	EPA 200.7
30. COBALT (ug/l)	p	56 ND	SW846 6010C
31. COPPER, TOTAL (ug/l)	p	110 ND	EPA 200.7
32. LEAD-FLAMELESS, TOTAL (ug/l)	p	67 ND	EPA 200.7
33. MERCURY, TOTAL (ug/l)	p	0.5 ND	EPA 245.1
34. NICKEL (ug/l)	p	220 ND	EPA 200.7
35. SELENIUM, TOTAL (ug/l)	p	220 ND	EPA 200.7
36. SILVER, TOTAL (ug/l)	p	44 ND	EPA 200.7
37. THALLIUM (ug/l)	p	220 ND	SW846 6010C
38. VANADIUM (ug/l)	p	56 ND	SW846 6010C
39. ZINC, TOTAL (ug/l)	p	250	EPA 200.7
40. ACETONE (ug/l)	p	10 ND	SW 846 8260B
41. ACRYLONITRILE (ug/l)	p	5 ND	SW 846 8260B
42. BENZENE (ug/l)	p	1 ND	SW 846 8260B
43. BROMOCHLOROMETHANE (CHLOROBR	p	1 ND	SW 846 8260B
44. BROMODICHLOROMETHANE (ug/l)	p	1 ND	SW 846 8260B
45. BROMOFORM (ug/l)	p	1 ND	SW 846 8260B
46. CARBON DISULFIDE (ug/l)	p	1 ND	SW 846 8260B
47. CARBON TETRACHLORIDE (ug/l)	p	1 ND	SW 846 8260B
48. CHLOROBENZENE (ug/l)	p	1 ND	SW 846 8260B
49. CHLOROETHANE (ug/l)	p	1 ND	SW 846 8260B
50. CHLOROFORM (ug/l)	p	1 ND	SW 846 8260B
51. 3-CHLORO-1-PROPENE (ug/l)	p	1 ND	SW 846 8260B
52. DIBROMOCHLOROMETHANE (ug/l)	p	1 ND	SW 846 8260B
53. 1,2-DIBROMO-3-CHLOROPROPANE (ug/l)	p	7 ND	SW 846 8260B
54. 1,2-DIBROMOETHANE (ug/l)	p	1 ND	SW 846 8260B
55. 1,2-DICHLOROETHANE (ug/l)	p	1 ND	SW 846 8260B
56. 1,3-DICHLOROETHANE (ug/l)	p	1 ND	SW 846 8260B

T - Please indicate detection limit if analyte is not detected

Monitoring Point No.	FFMH03SS
Sample Date	8/29/2019
I.D. No	101389

FORM 50

ANALYTE ug/l			LEACHATE DISCHARGE	DETECTION ZONE DISCHARGE	ANALYSIS METHOD NUMBER
57.	1,4-DICHLOROBENZENE	p		1 ND	SW 846 8260B
58.	TRANS 1,4-DICHLORO-2-BUTENE	p		3 ND	SW 846 8260B
59.	DICHLORODIFLUOROMETHANE	p		1 ND	SW 846 8260B
60.	1,1-DICHLOROETHANE	p		1 ND	SW 846 8260B
61.	1,2-DICHLOROETHANE	p		1 ND	SW 846 8260B
62.	1,1-DICHLOROETHENE	p		1 ND	SW 846 8260B
63.	CIS 1,2-DICHLOROETHENE	p		1 ND	SW 846 8260B
64.	TRANS 1,2-DICHLOROETHENE	p		1 ND	SW 846 8260B
65.	1,2-DICHLOROPROPANE	p		1 ND	SW 846 8260B
66.	CIS 1,3-DICHLOROPROPENE	p		1 ND	SW 846 8260B
67.	TRANS 1,3-DICHLOROPROPENE	p		1 ND	SW 846 8260B
68.	ETHYLBENZENE	p		1 ND	SW 846 8260B
69.	2-HEXANONE	p		5 ND	SW 846 8260B
70.	BROMOMETHANE	p		1 ND	SW 846 8260B
71.	CHLOROMETHANE	p		1 ND	SW 846 8260B
72.	DIBROMOMETHANE	p		1 ND	SW 846 8260B
73.	METHYLENE CHLORIDE	p		1 ND	SW 846 8260B
74.	2-BUTANONE (MEK)	p		10 ND	SW 846 8260B
75.	IODOMETHANE	p		1 ND	SW 846 8260B
76.	4-METHYL-2-PENTANONE	p		5 ND	SW 846 8260B
77.	STYRENE	p		1 ND	SW 846 8260B
78.	1,1,2,2-TETRACHLOROETHANE	p		1 ND	SW 846 8260B
79.	1,1,1,2-TETRACHLOROETHANE	p		1 ND	SW 846 8260B
80.	TETRACHLOROETHENE	p		1 ND	SW 846 8260B
81.	TOLUENE	p		1 ND	SW 846 8260B
82.	1,1,1-TRICHLOROETHANE	p		1 ND	SW 846 8260B
83.	1,1,2-TRICHLOROETHANE	p		1 ND	SW 846 8260B
84.	TRICHLOROETHENE	p		1 ND	SW 846 8260B

T - Please indicate detection limit if analyte is not detected

Monitoring Point No. FFMH03SSSample Date 8/29/2019I.D. No. 101389**FORM 50**

ANALYTE ug/l		LEACHATE DISCHARGE	T	DETECTION ZONE DISCHARGE	T	ANALYSIS METHOD NUMBER
85.	TRICHLOROFLUOROMETHANE	p		1 ND		SW 846 8260B
86.	1,2,3-TRICHLOROPROPANE	p		2 ND		SW 846 8260B
87.	VINYL ACETATE	p		5 ND		SW 846 8260B
88.	VINYL CHLORIDE	p		1 ND		SW 846 8260B
89.	XYLENES (TOTAL)	p		3 ND		SW 846 8260B

p = PADEP 273,284 analyte exclusively
d = Subtitle D, Appendix I analyte exclusively
All other analytes are common to both lists.

T - Please indicate detection limit if analyte is not detected

Analyzed in the 4th calendar quarter only



**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT**

Date Prepared/Revised 10/17/2019
DEP USE ONLY
Date Received

**FORM 50
MUNICIPAL WASTE LANDFILL
LEACHATE ANALYSES**

This form must be fully and accurately completed. All required information must be typed or legibly printed in the spaces provided. If additional space is necessary, identify each attached sheet as Form 50, reference the item number and identify the date prepared. The "date prepared/revised" on any attached sheets needs to match the "date prepared/revised" on this page.

General Reference: Section 273.255(d) and (e) and 273.276(a)
Federal Regulations, Subtitle D: 258.54 and Appendix I to Part 258.

SECTION A. SITE IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Management Aut

Site Name: Frey Farm Landfill

Facility ID (as issued by DEP):

SECTION B. FACILITY INFORMATION

Facility Name: Frey Farm Landfill

Sampling Point Number: FFMH05SS

Location: County Lancaster County Municipality: _____

Sampling Point Latitude: _____ ° _____ ' _____ " Longitude: _____ ° _____ ' _____ "

Sampling Method: Pumped Bailed Grab

Sample Field Filtered (must be 0.45 micron): Yes No

Sample Date (mm/dd/yy): 8/29/2019 Sample Collection Time: 9:50

Sample Collector's Name: Collected by Cli

Sample Collector's Affiliation: LCSWMA

Laboratory(ies) Performing Analysis: ALS Environmental

Lab Certification Number(s): 22-293

Lab Sample Number(s): 3054916003 Final Lab Analysis Completion Date: 9/11/2019

Were any holding times exceeded?: Yes No If yes, please explain in comments field.

Name/Affiliation of Person who Filled Out Form: Nick R. Rogers

Comments:

**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT**

Monitoring Point No. FFMH05SSSample Date 8/29/2019

I.D. No _____

**FORM 50
QUARTERLY MUNICIPAL WASTE LANDFILL
LEACHATE ANALYSES**

For new facilities and cells as well as existing facilities which were permitted and which received waste after April 9, 1988, discharge flow volume from leachate collection shall be measured daily [273.276(a)(1)]. Discharge flow volume from the detection zone shall be estimated weekly [273.255(d)(2)]. Form 50 is due quarterly after the flow of leachate from the collection system has started. For facilities or cells which have received no waste since April 9, 1988, detection zone monitoring will meet permit/closure requirements.

FLOW FACTOR	LEACHATE DISCHARGE	DETECTION ZONE DISCHARGE
Volume (average gpd)		2.57
Area Drained (acres)		21.44
Ratio (gallons/acre/day)		0.12

Once leachate flow begins from a leachate collection system, leachate discharge will be analyzed quarterly for all analytes listed below. In the leachate detection zone, any fluid found in any detection zone monitoring point must be sampled during the initial four quarters for the leachate indicator parameters (designated by *, below) to establish a baseline fluid composition. Thereafter, any fluid detected in each monitoring point in the leachate detection zone must be sampled annually for the leachate indicator parameters. Quarterly sampling of the fluid in any detection zone monitoring point for leachate indicator parameters is required only when the quarterly flow at that monitoring point exceeds 10 gallons per acre per day (weekly average for the quarter) for the cell(s) served by that monitoring point. If the indicator analytes confirm leachate contamination in the detection zone, the fluid will be analyzed initially within 30 days and thereafter annually for all analytes listed below. When MCL's (where established) of any detection zone analytes on this form are exceeded, annual groundwater monitoring must include the Subtitle D detection zone add-on list analytes found on Form 19.

ANALYTE mg/l unless otherwise indicated	LEACHATE DISCHARGE	DETECTION ZONE DISCHARGE	ANALYSIS METHOD NUMBER
1. ALKALINITY p		705	SM20-2320B
2. AMMONIA-NITROGEN p		2.19	ASTM D6919-03
3. BICARBONATE ALKALINITY p		616	SM20-2321
4. CALCIUM, TOTAL p		20.9	SW846 6010C
5. COD (CHEMICAL OXYGEN DEMAND) p		25	EPA 410.4
6. CHLORIDE p		494	EPA 300
7. MAGNESIUM, TOTAL p		6	SW846 6010C
8. pH-FIELD (SU) p		8.46	FIELD
9. pH-LAB (SU) p		8.78	150.1/4500B
10. POTASSIUM, TOTAL p		9	SW846 6010C
11. SPEC. COND., FIELD (umhos/cm) p		3400	FIELD
12. SPEC. COND., LAB (umhos/cm) p		3450	EPA 120.1
13. SODIUM, TOTAL p		705	SW846 6010C
14. SULFATE p		375	EPA 300
15. TOC (TOTAL ORGANIC CARBON) p		8.6	SM20-5310B
16. FLUORIDE p		0.6	EPA 300
17. IRON, TOTAL p		0.11	SW846 6010C
18. MANGANESE, TOTAL p		0.0099	SW846 6010C
19. NITRATE-NITROGEN p		6	EPA 300

T - Please indicate detection limit if analyte is not detected

Monitoring Point No. FFMH05SSSample Date 8/29/2019

I.D. No _____

FORM 50

ANALYTE mg/l unless otherwise indicated		LEACHATE DISCHARGE	DETECTION ZONE DISCHARGE	ANALYSIS METHOD NUMBER
20.	TOTAL PHENOLICS (mg/l) p		0.005 ND	SW846 9066
21.	TDS (TOT. DISSOLVED SOLIDS) (mg/l) p		2240	SM20-2540C
22.	TRITIUM (pCi/l) p			EPA 906
23.	TURBIDITY (NTU) p		1.04	SM20-2130B
24.	ANTIMONY (ug/l) p		22 ND	SW846 6010C
25.	ARSENIC, TOTAL (ug/l) p		18	EPA 200.7
26.	BARIUM, TOTAL (ug/l) p		20	EPA 200.7
27.	BERYLLIUM (ug/l) p		4.4 ND	SW846 6010C
28.	CADMIUM, TOTAL (ug/l) p		2.2 ND	EPA 200.7
29.	CHROMIUM, TOTAL (ug/l) p		5.6 ND	EPA 200.7
30.	COBALT (ug/l) p		5.6 ND	SW846 6010C
31.	COPPER, TOTAL (ug/l) p		14	EPA 200.7
32.	LEAD-FLAMELESS, TOTAL (ug/l) p		6.7 ND	EPA 200.7
33.	MERCURY, TOTAL (ug/l) p		0.5 ND	EPA 245.1
34.	NICKEL (ug/l) p		22 ND	EPA 200.7
35.	SELENIUM, TOTAL (ug/l) p		22 ND	EPA 200.7
36.	SILVER, TOTAL (ug/l) p		4.4 ND	EPA 200.7
37.	THALLIUM (ug/l) p		22 ND	SW846 6010C
38.	VANADIUM (ug/l) p		5.6 ND	SW846 6010C
39.	ZINC, TOTAL (ug/l) p		22 ND	EPA 200.7
40.	ACETONE (ug/l) p		10 ND	SW 846 8260B
41.	ACRYLONITRILE (ug/l) p		5 ND	SW 846 8260B
42.	BENZENE (ug/l) p		1 ND	SW 846 8260B
43.	BROMOCHLOROMETHANE (CHLOROBR p		1 ND	SW 846 8260B
44.	BROMODICHLOROMETHANE (ug/l) p		1 ND	SW 846 8260B
45.	BROMOFORM (ug/l) p		1 ND	SW 846 8260B
46.	CARBON DISULFIDE (ug/l) p		1 ND	SW 846 8260B
47.	CARBON TETRACHLORIDE (ug/l) p		1 ND	SW 846 8260B
48.	CHLOROBENZENE (ug/l) p		1 ND	SW 846 8260B
49.	CHLOROETHANE (ug/l) p		1 ND	SW 846 8260B
50.	CHLOROFORM (ug/l) p		1 ND	SW 846 8260B
51.	3-CHLORO-1-PROPENE (ug/l) p		1 ND	SW 846 8260B
52.	DIBROMOCHLOROMETHANE (ug/l) p		1 ND	SW 846 8260B
53.	1,2-DIBROMO-3-CHLOROPROPANE (ug/l) p		7 ND	SW 846 8260B
54.	1,2-DIBROMOETHANE (ug/l) p		1 ND	SW 846 8260B
55.	1,2-DICHLOROBENZENE (ug/l) p		1 ND	SW 846 8260B
56.	1,3-DICHLOROBENZENE (ug/l) p		1 ND	SW 846 8260B

T - Please indicate detection limit if analyte is not detected

Monitoring Point No. FFMH05SSSample Date 8/29/2019

I.D. No. _____

FORM 50

ANALYTE ug/l			LEACHATE DISCHARGE ^T	DETECTION ZONE DISCHARGE ^T	ANALYSIS METHOD NUMBER
57.	1,4-DICHLOROBENZENE	p		1 ND	SW 846 8260B
58.	TRANS 1,4-DICHLORO-2-BUTENE	p		3 ND	SW 846 8260B
59.	DICHLORODIFLUOROMETHANE	p		1 ND	SW 846 8260B
60.	1,1-DICHLOROETHANE	p		1 ND	SW 846 8260B
61.	1,2-DICHLOROETHANE	p		1 ND	SW 846 8260B
62.	1,1-DICHLOROETHENE	p		1 ND	SW 846 8260B
63.	CIS 1,2-DICHLOROETHENE	p		1 ND	SW 846 8260B
64.	TRANS 1,2-DICHLOROETHENE	p		1 ND	SW 846 8260B
65.	1,2-DICHLOROPROPANE	p		1 ND	SW 846 8260B
66.	CIS 1,3-DICHLOROPROPENE	p		1 ND	SW 846 8260B
67.	TRANS 1,3-DICHLOROPROPENE	p		1 ND	SW 846 8260B
68.	ETHYLBENZENE	p		1 ND	SW 846 8260B
69.	2-HEXANONE	p		5 ND	SW 846 8260B
70.	BROMOMETHANE	p		1 ND	SW 846 8260B
71.	CHLOROMETHANE	p		1 ND	SW 846 8260B
72.	DIBROMOMETHANE	p		1 ND	SW 846 8260B
73.	METHYLENE CHLORIDE	p		1 ND	SW 846 8260B
74.	2-BUTANONE (MEK)	p		10 ND	SW 846 8260B
75.	IODOMETHANE	p		1 ND	SW 846 8260B
76.	4-METHYL-2-PENTANONE	p		5 ND	SW 846 8260B
77.	STYRENE	p		1 ND	SW 846 8260B
78.	1,1,2,2-TETRACHLOROETHANE	p		1 ND	SW 846 8260B
79.	1,1,1,2-TETRACHLOROETHANE	p		1 ND	SW 846 8260B
80.	TETRACHLOROETHENE	p		1 ND	SW 846 8260B
81.	TOLUENE	p		1 ND	SW 846 8260B
82.	1,1,1-TRICHLOROETHANE	p		1 ND	SW 846 8260B
83.	1,1,2-TRICHLOROETHANE	p		1 ND	SW 846 8260B
84.	TRICHLOROETHENE	p		1 ND	SW 846 8260B

T - Please indicate detection limit if analyte is not detected

Monitoring Point No. FFMH05SSSample Date 8/29/2019

I.D. No. _____

FORM 50

ANALYTE ug/l		LEACHATE DISCHARGE	T	DETECTION ZONE DISCHARGE	T	ANALYSIS METHOD NUMBER
85.	TRICHLOROFLUOROMETHANE	p		1 ND		SW 846 8260B
86.	1,2,3-TRICHLOROPROPANE	p		2 ND		SW 846 8260B
87.	VINYL ACETATE	p		5 ND		SW 846 8260B
88.	VINYL CHLORIDE	p		1 ND		SW 846 8260B
89.	XYLENES (TOTAL)	p		3 ND		SW 846 8260B

p = PADEP 273,284 analyte exclusively
d = Subtitle D, Appendix I analyte exclusively
All other analytes are common to both lists.

T - Please indicate detection limit if analyte is not detected

Analyzed in the 4th calendar quarter only



**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT**

Date Prepared/Revised 10/17/2019
DEP USE ONLY
Date Received

**FORM 50
MUNICIPAL WASTE LANDFILL
LEACHATE ANALYSES**

This form must be fully and accurately completed. All required information must be typed or legibly printed in the spaces provided. If additional space is necessary, identify each attached sheet as Form 50, reference the item number and identify the date prepared. The "date prepared/revised" on any attached sheets needs to match the "date prepared/revised" on this page.

General Reference: Section 273.255(d) and (e) and 273.276(a)
Federal Regulations, Subtitle D: 258.54 and Appendix I to Part 258.

SECTION A. SITE IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Management Aut

Site Name: Frey Farm Landfill

Facility ID (as issued by DEP):

SECTION B. FACILITY INFORMATION

Facility Name: Frey Farm Landfill

Sampling Point Number: FFMH06SS

Location: County Lancaster County Municipality: _____

Sampling Point Latitude: _____ ° _____ ' _____ " Longitude: _____ ° _____ ' _____ "

Sampling Method: Pumped Bailed Grab

Sample Field Filtered (must be 0.45 micron): Yes No

Sample Date (mm/dd/yy): 8/29/2019 Sample Collection Time: 9:30

Sample Collector's Name: Collected by Cli

Sample Collector's Affiliation: LCSWMA

Laboratory(ies) Performing Analysis: ALS Environmental

Lab Certification Number(s): 22-293

Lab Sample Number(s): 3054916004 Final Lab Analysis Completion Date: 9/9/2019

Were any holding times exceeded?: Yes No If yes, please explain in comments field.

Name/Affiliation of Person who Filled Out Form: Nick R. Rogers

Comments:

**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT**

Monitoring Point No. FFMH06SSSample Date 8/29/2019

I.D. No _____

**FORM 50
QUARTERLY MUNICIPAL WASTE LANDFILL
LEACHATE ANALYSES**

For new facilities and cells as well as existing facilities which were permitted and which received waste after April 9, 1988, discharge flow volume from leachate collection shall be measured daily [273.276(a)(1)]. Discharge flow volume from the detection zone shall be estimated weekly [273.255(d)(2)]. Form 50 is due quarterly after the flow of leachate from the collection system has started. For facilities or cells which have received no waste since April 9, 1988, detection zone monitoring will meet permit/closure requirements.

FLOW FACTOR	LEACHATE DISCHARGE	DETECTION ZONE DISCHARGE
Volume (average gpd)		5.46
Area Drained (acres)		11.67
Ratio (gallons/acre/day)		0.47

Once leachate flow begins from a leachate collection system, leachate discharge will be analyzed quarterly for all analytes listed below. In the leachate detection zone, any fluid found in any detection zone monitoring point must be sampled during the initial four quarters for the leachate indicator parameters (designated by *, below) to establish a baseline fluid composition. Thereafter, any fluid detected in each monitoring point in the leachate detection zone must be sampled annually for the leachate indicator parameters. Quarterly sampling of the fluid in any detection zone monitoring point for leachate indicator parameters is required only when the quarterly flow at that monitoring point exceeds 10 gallons per acre per day (weekly average for the quarter) for the cell(s) served by that monitoring point. If the indicator analytes confirm leachate contamination in the detection zone, the fluid will be analyzed initially within 30 days and thereafter annually for all analytes listed below. When MCL's (where established) of any detection zone analytes on this form are exceeded, annual groundwater monitoring must include the Subtitle D detection zone add-on list analytes found on Form 19.

ANALYTE mg/l unless otherwise indicated	LEACHATE DISCHARGE	DETECTION ZONE DISCHARGE	ANALYSIS METHOD NUMBER
1. ALKALINITY p		191	SM20-2320B
2. AMMONIA-NITROGEN p		0.1 ND	ASTM D6919-03
3. BICARBONATE ALKALINITY p		191	SM20-2321
4. CALCIUM, TOTAL p		94.8	SW846 6010C
5. COD (CHEMICAL OXYGEN DEMAND) p		15 ND	EPA 410.4
6. CHLORIDE p		127	EPA 300
7. MAGNESIUM, TOTAL p		28.4	SW846 6010C
8. pH-FIELD (SU) p		7.45	FIELD
9. pH-LAB (SU) p		8.09	150.1/4500B
10. POTASSIUM, TOTAL p		22.5	SW846 6010C
11. SPEC. COND., FIELD (umhos/cm) p		1238	FIELD
12. SPEC. COND., LAB (umhos/cm) p		1290	EPA 120.1
13. SODIUM, TOTAL p		137	SW846 6010C
14. SULFATE p		276	EPA 300
15. TOC (TOTAL ORGANIC CARBON) p		2.5	SM20-5310B
16. FLUORIDE p		0.2 ND	EPA 300
17. IRON, TOTAL p		0.067 ND	SW846 6010C
18. MANGANESE, TOTAL p		0.0056 ND	SW846 6010C
19. NITRATE-NITROGEN p		1.7	EPA 300

T - Please indicate detection limit if analyte is not detected

Monitoring Point No. FFMH06SS

Sample Date 8/29/2019

I.D. No

FORM 50

ANALYTE mg/l unless otherwise indicated		LEACHATE DISCHARGE	DETECTION ZONE DISCHARGE	ANALYSIS METHOD NUMBER
20.	TOTAL PHENOLICS (mg/l)	p	0.005 ND	SW846 9066
21.	TDS (TOT. DISSOLVED SOLIDS) (mg/l)	p	869	SM20-2540C
22.	TRITIUM (pCi/l)	p		EPA 906
23.	TURBIDITY (NTU)	p	0.67	SM20-2130B
24.	ANTIMONY (ug/l)	p	22 ND	SW846 6010C
25.	ARSENIC, TOTAL (ug/l)	p	9 ND	EPA 200.7
26.	BARIUM, TOTAL (ug/l)	p	39	EPA 200.7
27.	BERYLLIUM (ug/l)	p	4.4 ND	SW846 6010C
28.	CADMIUM, TOTAL (ug/l)	p	2.2 ND	EPA 200.7
29.	CHROMIUM, TOTAL (ug/l)	p	5.6 ND	EPA 200.7
30.	COBALT (ug/l)	p	5.6 ND	SW846 6010C
31.	COPPER, TOTAL (ug/l)	p	11 ND	EPA 200.7
32.	LEAD-FLAMELESS, TOTAL (ug/l)	p	6.7 ND	EPA 200.7
33.	MERCURY, TOTAL (ug/l)	p	0.5 ND	EPA 245.1
34.	NICKEL (ug/l)	p	22 ND	EPA 200.7
35.	SELENIUM, TOTAL (ug/l)	p	22 ND	EPA 200.7
36.	SILVER, TOTAL (ug/l)	p	5.9	EPA 200.7
37.	THALLIUM (ug/l)	p	22 ND	SW846 6010C
38.	VANADIUM (ug/l)	p	5.6 ND	SW846 6010C
39.	ZINC, TOTAL (ug/l)	p	22 ND	EPA 200.7
40.	ACETONE (ug/l)	p	10.2	SW 846 8260B
41.	ACRYLONITRILE (ug/l)	p	5 ND	SW 846 8260B
42.	BENZENE (ug/l)	p	1 ND	SW 846 8260B
43.	BROMOCHLOROMETHANE (CHLOROBR	p	1 ND	SW 846 8260B
44.	BROMODICHLOROMETHANE (ug/l)	p	1 ND	SW 846 8260B
45.	BROMOFORM (ug/l)	p	1 ND	SW 846 8260B
46.	CARBON DISULFIDE (ug/l)	p	1 ND	SW 846 8260B
47.	CARBON TETRACHLORIDE (ug/l)	p	1 ND	SW 846 8260B
48.	CHLOROBENZENE (ug/l)	p	1 ND	SW 846 8260B
49.	CHLOROETHANE (ug/l)	p	1 ND	SW 846 8260B
50.	CHLOROFORM (ug/l)	p	1 ND	SW 846 8260B
51.	3-CHLORO-1-PROPENE (ug/l)	p	1 ND	SW 846 8260B
52.	DIBROMOCHLOROMETHANE (ug/l)	p	1 ND	SW 846 8260B
53.	1,2-DIBROMO-3-CHLOROPROPANE (ug/l)	p	7 ND	SW 846 8260B
54.	1,2-DIBROMOETHANE (ug/l)	p	1 ND	SW 846 8260B
55.	1,2-DICHLOROBENZENE (ug/l)	p	1 ND	SW 846 8260B
56.	1,3-DICHLOROBENZENE (ug/l)	p	1 ND	SW 846 8260B

T - Please indicate detection limit if analyte is not detected

Monitoring Point No. FFMH06SSSample Date 8/29/2019

I.D. No. _____

FORM 50

ANALYTE ug/l			LEACHATE DISCHARGE	DETECTION ZONE DISCHARGE	ANALYSIS METHOD NUMBER
57.	1,4-DICHLOROBENZENE	p		1 ND	SW 846 8260B
58.	TRANS 1,4-DICHLORO-2-BUTENE	p		3 ND	SW 846 8260B
59.	DICHLORODIFLUOROMETHANE	p		1 ND	SW 846 8260B
60.	1,1-DICHLOROETHANE	p		1 ND	SW 846 8260B
61.	1,2-DICHLOROETHANE	p		1 ND	SW 846 8260B
62.	1,1-DICHLOROETHENE	p		1 ND	SW 846 8260B
63.	CIS 1,2-DICHLOROETHENE	p		1 ND	SW 846 8260B
64.	TRANS 1,2-DICHLOROETHENE	p		1 ND	SW 846 8260B
65.	1,2-DICHLOROPROPANE	p		1 ND	SW 846 8260B
66.	CIS 1,3-DICHLOROPROPENE	p		1 ND	SW 846 8260B
67.	TRANS 1,3-DICHLOROPROPENE	p		1 ND	SW 846 8260B
68.	ETHYLBENZENE	p		1 ND	SW 846 8260B
69.	2-HEXANONE	p		5 ND	SW 846 8260B
70.	BROMOMETHANE	p		1 ND	SW 846 8260B
71.	CHLOROMETHANE	p		1 ND	SW 846 8260B
72.	DIBROMOMETHANE	p		1 ND	SW 846 8260B
73.	METHYLENE CHLORIDE	p		1 ND	SW 846 8260B
74.	2-BUTANONE (MEK)	p		10 ND	SW 846 8260B
75.	IODOMETHANE	p		1 ND	SW 846 8260B
76.	4-METHYL-2-PENTANONE	p		5 ND	SW 846 8260B
77.	STYRENE	p		1 ND	SW 846 8260B
78.	1,1,2,2-TETRACHLOROETHANE	p		1 ND	SW 846 8260B
79.	1,1,1,2-TETRACHLOROETHANE	p		1 ND	SW 846 8260B
80.	TETRACHLOROETHENE	p		1 ND	SW 846 8260B
81.	TOLUENE	p		1 ND	SW 846 8260B
82.	1,1,1-TRICHLOROETHANE	p		1 ND	SW 846 8260B
83.	1,1,2-TRICHLOROETHANE	p		1 ND	SW 846 8260B
84.	TRICHLOROETHENE	p		1 ND	SW 846 8260B

T - Please indicate detection limit if analyte is not detected

Monitoring Point No. FFMH06SSSample Date 8/29/2019

I.D. No. _____

FORM 50

ANALYTE ug/l			LEACHATE DISCHARGE	T	DETECTION ZONE DISCHARGE	T	ANALYSIS METHOD NUMBER
85.	TRICHLOROFLUOROMETHANE	p			1 ND		SW 846 8260B
86.	1,2,3-TRICHLOROPROPANE	p			2 ND		SW 846 8260B
87.	VINYL ACETATE	p			5 ND		SW 846 8260B
88.	VINYL CHLORIDE	p			1 ND		SW 846 8260B
89.	XYLENES (TOTAL)	p			3 ND		SW 846 8260B

p = PADEP 273,284 analyte exclusively
d = Subtitle D, Appendix I analyte exclusively
All other analytes are common to both lists.

T - Please indicate detection limit if analyte is not detected

Analyzed in the 4th calendar quarter only

September 12, 2019

Mr. Daniel Brown
Lancaster County Solid Waste Authority
1299 Hbg Pike, P.O. Box 4425
Lancaster, PA 17604

Certificate of Analysis

Project Name:	FREY FARM	Workorder:	3054916
Purchase Order:	PO1000126	Workorder ID:	3RD QTR 2019 FFMH-FORM 50

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Thursday, August 29, 2019.

The ALS Environmental laboratory in Middletown, Pennsylvania is a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory and as such, certifies that all applicable test results meet the requirements of NELAP.

If you have any questions regarding this certificate of analysis, please contact Ms. Susan J Scherer (Project Coordinator) at (717) 944-5541.

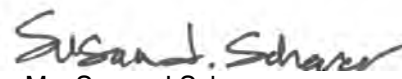
Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications section of the ALS website at www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads.

This laboratory report may not be reproduced, except in full, without the written approval of ALS Environmental.

ALS Spring City: 10 Riverside Drive, Spring City, PA 19475 610-948-4903

CC: Mr. Nicholas Rogers , Ms. Jordan Gallagher , Mr. Jeff Musser

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.


Ms. Susan J Scherer
Project Coordinator

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SAMPLE SUMMARY

Workorder: 3054916 3RD QTR 2019 FFMH-FORM 50

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
3054916001	FFMH01SS	Water	8/29/2019 10:05	8/29/2019 14:50	Collected by Client
3054916002	FFMH03SS	Water	8/29/2019 10:15	8/29/2019 14:50	Collected by Client
3054916003	FFMH05SS	Water	8/29/2019 09:50	8/29/2019 14:50	Collected by Client
3054916004	FFMH06SS	Water	8/29/2019 09:30	8/29/2019 14:50	Collected by Client

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SAMPLE SUMMARY

Workorder: 3054916 3RD QTR 2019 FFMH-FORM 50

Notes

- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 - Field Services Sampling Plan).
- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
- The Chain of Custody document is included as part of this report.
- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are performed in the laboratory and are therefore analyzed out of hold time.
- Method references listed on this report beginning with the prefix "S" followed by a method number (such as S2310B-97) refer to methods from "Standard Methods for the Examination of Water and Wastewater".
- For microbiological analyses, the "Prepared" value is the date/time into the incubator and the "Analyzed" value is the date/time out the incubator.
- An Analysis-Prep Method Cross Reference Table is included after Analytical Results & Qualifiers section in this report.

Standard Acronyms/Flags

J	Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
U	Indicates that the analyte was Not Detected (ND)
N	Indicates presumptive evidence of the presence of a compound
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RDL	Reporting Detection Limit
ND	Not Detected - indicates that the analyte was Not Detected at the RDL
Cntr	Analysis was performed using this container
RegLmt	Regulatory Limit
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
%Rec	Percent Recovery
RPD	Relative Percent Difference
LOD	DoD Limit of Detection
LOQ	DoD Limit of Quantitation
DL	DoD Detection Limit
I	Indicates reported value is greater than or equal to the Method Detection Limit (MDL) but less than the Report Detection Limit (RDL)
(S)	Surrogate Compound
NC	Not Calculated
*	Result outside of QC limits

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ANALYTICAL RESULTS

Workorder: 3054916 3RD QTR 2019 FFMH-FORM 50

Lab ID: **3054916001**

Date Collected: 8/29/2019 10:05

Matrix: Water

Sample ID: **FFMH01SS**

Date Received: 8/29/2019 14:50

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	17.8		ug/L	10.0	SW846 8260B			9/6/19 17:48	TMP	J
Acrylonitrile	ND		ug/L	5.0	SW846 8260B			9/6/19 17:48	TMP	J
Benzene	1.1		ug/L	1.0	SW846 8260B			9/6/19 17:48	TMP	J
Bromochloromethane	ND		ug/L	1.0	SW846 8260B			9/6/19 17:48	TMP	J
Bromodichloromethane	ND		ug/L	1.0	SW846 8260B			9/6/19 17:48	TMP	J
Bromoform	ND		ug/L	1.0	SW846 8260B			9/6/19 17:48	TMP	J
Bromomethane	ND		ug/L	1.0	SW846 8260B			9/6/19 17:48	TMP	J
2-Butanone	ND		ug/L	10.0	SW846 8260B			9/6/19 17:48	TMP	J
Carbon Disulfide	ND		ug/L	1.0	SW846 8260B			9/6/19 17:48	TMP	J
Carbon Tetrachloride	ND		ug/L	1.0	SW846 8260B			9/6/19 17:48	TMP	J
Chlorobenzene	ND		ug/L	1.0	SW846 8260B			9/6/19 17:48	TMP	J
Chlorodibromomethane	ND		ug/L	1.0	SW846 8260B			9/6/19 17:48	TMP	J
Chloroethane	ND		ug/L	1.0	SW846 8260B			9/6/19 17:48	TMP	J
Chloroform	ND		ug/L	1.0	SW846 8260B			9/6/19 17:48	TMP	J
Chloromethane	ND		ug/L	1.0	SW846 8260B			9/6/19 17:48	TMP	J
3-Chloro-1-propene	ND		ug/L	1.0	SW846 8260B			9/6/19 17:48	TMP	J
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	SW846 8260B			9/6/19 17:48	TMP	J
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			9/6/19 17:48	TMP	J
Dibromomethane	ND		ug/L	1.0	SW846 8260B			9/6/19 17:48	TMP	J
trans-1,4-Dichloro-2-butene	ND		ug/L	3.0	SW846 8260B			9/6/19 17:48	TMP	J
1,2-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			9/6/19 17:48	TMP	J
1,3-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			9/6/19 17:48	TMP	J
1,4-Dichlorobenzene	1.9		ug/L	1.0	SW846 8260B			9/6/19 17:48	TMP	J
Dichlorodifluoromethane	ND		ug/L	1.0	SW846 8260B			9/6/19 17:48	TMP	J
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			9/6/19 17:48	TMP	J
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			9/6/19 17:48	TMP	J
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			9/6/19 17:48	TMP	J
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			9/6/19 17:48	TMP	J
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			9/6/19 17:48	TMP	J
1,2-Dichloropropane	ND		ug/L	1.0	SW846 8260B			9/6/19 17:48	TMP	J
cis-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			9/6/19 17:48	TMP	J
trans-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			9/6/19 17:48	TMP	J
Ethylbenzene	4.1		ug/L	1.0	SW846 8260B			9/6/19 17:48	TMP	J
2-Hexanone	ND		ug/L	5.0	SW846 8260B			9/6/19 17:48	TMP	J
Iodomethane	ND		ug/L	1.0	SW846 8260B			9/6/19 17:48	TMP	J
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	SW846 8260B			9/6/19 17:48	TMP	J

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ANALYTICAL RESULTS

Workorder: 3054916 3RD QTR 2019 FFMH-FORM 50

Lab ID: **3054916001**

Date Collected: 8/29/2019 10:05

Matrix: Water

Sample ID: **FFMH01SS**

Date Received: 8/29/2019 14:50

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			9/6/19 17:48	TMP	J
Styrene	ND		ug/L	1.0	SW846 8260B			9/6/19 17:48	TMP	J
1,1,1,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			9/6/19 17:48	TMP	J
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			9/6/19 17:48	TMP	J
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			9/6/19 17:48	TMP	J
Toluene	ND		ug/L	1.0	SW846 8260B			9/6/19 17:48	TMP	J
Total Xylenes	6.5		ug/L	3.0	SW846 8260B			9/6/19 17:48	TMP	J
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			9/6/19 17:48	TMP	J
1,1,2-Trichloroethane	ND		ug/L	1.0	SW846 8260B			9/6/19 17:48	TMP	J
Trichloroethene	ND		ug/L	1.0	SW846 8260B			9/6/19 17:48	TMP	J
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			9/6/19 17:48	TMP	J
1,2,3-Trichloropropane	ND		ug/L	2.0	SW846 8260B			9/6/19 17:48	TMP	J
Vinyl Acetate	ND		ug/L	5.0	SW846 8260B			9/6/19 17:48	TMP	J
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			9/6/19 17:48	TMP	J
o-Xylene	2.9		ug/L	1.0	SW846 8260B			9/6/19 17:48	TMP	J
mp-Xylene	3.6		ug/L	2.0	SW846 8260B			9/6/19 17:48	TMP	J
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	101		%	62 - 133	SW846 8260B			9/6/19 17:48	TMP	J
4-Bromofluorobenzene (S)	113		%	79 - 114	SW846 8260B			9/6/19 17:48	TMP	J
Dibromofluoromethane (S)	98.2		%	78 - 116	SW846 8260B			9/6/19 17:48	TMP	J
Toluene-d8 (S)	98.2		%	76 - 127	SW846 8260B			9/6/19 17:48	TMP	J
Library Search - Volatiles										
SILANOL, TERT-BUTYLDIMETHYL	18.7	J N	ug/L		SW846 8260B			9/6/19 17:48	TMP	J
WET CHEMISTRY										
Alkalinity, Bicarbonate	440		mg/L	5	SM2320B-2011			9/4/19 09:04	MBW	B
Alkalinity, Total	440	4	mg/L	5	SM2320B-2011			9/4/19 09:04	MBW	B
Ammonia-N	252		mg/L	1.00	D6919-09			9/11/19 19:08	AK	F
Chemical Oxygen Demand (COD)	1100		mg/L	75	EPA 410.4			9/11/19 19:55	AK	F
Chloride	22700		mg/L	500	EPA 300.0			8/30/19 10:55	CHW	B
Fluoride	ND	2	mg/L	1.0	EPA 300.0			8/30/19 10:39	CHW	B
Nitrate-N	ND	3	mg/L	1.0	EPA 300.0			8/30/19 10:39	CHW	B
pH	6.47	1	pH_Units		S4500HB-11			9/4/19 09:04	MBW	B
Phenolics	0.02		mg/L	0.01	SW846 9066	9/3/19 09:17	C_D	9/4/19 09:17	C_D	H
Specific Conductance	48300		umhos/cm	1	SW846 9050A			9/4/19 09:04	MBW	B
Sulfate	81.4		mg/L	10.0	EPA 300.0			8/30/19 10:39	CHW	B

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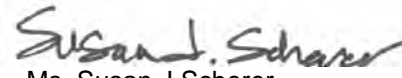
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ANALYTICAL RESULTS

Workorder: 3054916 3RD QTR 2019 FFMH-FORM 50

Lab ID: **3054916001** Date Collected: 8/29/2019 10:05 Matrix: Water
Sample ID: **FFMH01SS** Date Received: 8/29/2019 14:50

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Total Dissolved Solids	42200		mg/L	5	S2540C-11			9/5/19 14:42	D1C	B
Total Organic Carbon (TOC)	94.3		mg/L	12.5	SW846 9060A			9/4/19 08:19	PAG	C
Turbidity	995		NTU	0.10	SM2130B-2011			8/31/19 06:36	R2B	B
METALS										
Antimony, Total	ND		mg/L	0.22	SW846 6010C	9/3/19 17:20	AHI	9/10/19 15:22	SRT	G1
Arsenic, Total	ND		mg/L	0.090	SW846 6010C	9/3/19 17:20	AHI	9/10/19 15:22	SRT	G1
Barium, Total	2.5		mg/L	0.11	SW846 6010C	9/3/19 17:20	AHI	9/10/19 15:22	SRT	G1
Beryllium, Total	ND		mg/L	0.044	SW846 6010C	9/3/19 17:20	AHI	9/10/19 15:22	SRT	G1
Cadmium, Total	0.023		mg/L	0.022	SW846 6010C	9/3/19 17:20	AHI	9/10/19 15:22	SRT	G1
Calcium, Total	4420		mg/L	1.1	SW846 6010C	9/3/19 17:20	AHI	9/10/19 15:22	SRT	G1
Chromium, Total	ND		mg/L	0.056	SW846 6010C	9/3/19 17:20	AHI	9/10/19 15:22	SRT	G1
Cobalt, Total	ND		mg/L	0.056	SW846 6010C	9/3/19 17:20	AHI	9/10/19 15:22	SRT	G1
Copper, Total	ND		mg/L	0.11	SW846 6010C	9/3/19 17:20	AHI	9/10/19 15:22	SRT	G1
Iron, Total	236		mg/L	0.67	SW846 6010C	9/3/19 17:20	AHI	9/10/19 15:22	SRT	G1
Lead, Total	ND		mg/L	0.067	SW846 6010C	9/3/19 17:20	AHI	9/10/19 15:22	SRT	G1
Magnesium, Total	453		mg/L	1.1	SW846 6010C	9/3/19 17:20	AHI	9/10/19 15:22	SRT	G1
Manganese, Total	8.1		mg/L	0.056	SW846 6010C	9/3/19 17:20	AHI	9/10/19 15:22	SRT	G1
Mercury, Total	ND		mg/L	0.00050	SW846 7470A	9/4/19 10:00	AHI	9/4/19 13:09	AHI	G
Nickel, Total	ND		mg/L	0.22	SW846 6010C	9/3/19 17:20	AHI	9/10/19 15:22	SRT	G1
Potassium, Total	2140		mg/L	5.6	SW846 6010C	9/3/19 17:20	AHI	9/10/19 15:22	SRT	G1
Selenium, Total	ND		mg/L	0.22	SW846 6010C	9/3/19 17:20	AHI	9/10/19 15:22	SRT	G1
Silver, Total	ND		mg/L	0.044	SW846 6010C	9/3/19 17:20	AHI	9/10/19 15:22	SRT	G1
Sodium, Total	5830		mg/L	11.1	SW846 6010C	9/3/19 17:20	AHI	9/10/19 17:00	SRT	G1
Thallium, Total	ND		mg/L	0.22	SW846 6010C	9/3/19 17:20	AHI	9/10/19 15:22	SRT	G1
Vanadium, Total	ND		mg/L	0.056	SW846 6010C	9/3/19 17:20	AHI	9/10/19 15:22	SRT	G1
Zinc, Total	ND		mg/L	0.22	SW846 6010C	9/3/19 17:20	AHI	9/10/19 15:22	SRT	G1
FIELD PARAMETERS										
pH, Field (SM4500B)	6.48		pH_Units		S4500HB-11			8/29/19 10:05	CLT	A
Specific Conductance, Field	46900		umhos/cm	1	SM2510B-2011			8/29/19 10:05	CLT	A



Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3054916 3RD QTR 2019 FFMH-FORM 50

Lab ID: **3054916002**

Date Collected: 8/29/2019 10:15

Matrix: Water

Sample ID: **FFMH03SS**

Date Received: 8/29/2019 14:50

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	SW846 8260B			9/6/19 18:10	TMP	J
Acrylonitrile	ND		ug/L	5.0	SW846 8260B			9/6/19 18:10	TMP	J
Benzene	ND		ug/L	1.0	SW846 8260B			9/6/19 18:10	TMP	J
Bromochloromethane	ND		ug/L	1.0	SW846 8260B			9/6/19 18:10	TMP	J
Bromodichloromethane	ND		ug/L	1.0	SW846 8260B			9/6/19 18:10	TMP	J
Bromoform	ND		ug/L	1.0	SW846 8260B			9/6/19 18:10	TMP	J
Bromomethane	ND		ug/L	1.0	SW846 8260B			9/6/19 18:10	TMP	J
2-Butanone	ND		ug/L	10.0	SW846 8260B			9/6/19 18:10	TMP	J
Carbon Disulfide	ND		ug/L	1.0	SW846 8260B			9/6/19 18:10	TMP	J
Carbon Tetrachloride	ND		ug/L	1.0	SW846 8260B			9/6/19 18:10	TMP	J
Chlorobenzene	ND		ug/L	1.0	SW846 8260B			9/6/19 18:10	TMP	J
Chlorodibromomethane	ND		ug/L	1.0	SW846 8260B			9/6/19 18:10	TMP	J
Chloroethane	ND		ug/L	1.0	SW846 8260B			9/6/19 18:10	TMP	J
Chloroform	ND		ug/L	1.0	SW846 8260B			9/6/19 18:10	TMP	J
Chloromethane	ND		ug/L	1.0	SW846 8260B			9/6/19 18:10	TMP	J
3-Chloro-1-propene	ND		ug/L	1.0	SW846 8260B			9/6/19 18:10	TMP	J
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	SW846 8260B			9/6/19 18:10	TMP	J
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			9/6/19 18:10	TMP	J
Dibromomethane	ND		ug/L	1.0	SW846 8260B			9/6/19 18:10	TMP	J
trans-1,4-Dichloro-2-butene	ND		ug/L	3.0	SW846 8260B			9/6/19 18:10	TMP	J
1,2-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			9/6/19 18:10	TMP	J
1,3-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			9/6/19 18:10	TMP	J
1,4-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			9/6/19 18:10	TMP	J
Dichlorodifluoromethane	ND		ug/L	1.0	SW846 8260B			9/6/19 18:10	TMP	J
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			9/6/19 18:10	TMP	J
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			9/6/19 18:10	TMP	J
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			9/6/19 18:10	TMP	J
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			9/6/19 18:10	TMP	J
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			9/6/19 18:10	TMP	J
1,2-Dichloropropane	ND		ug/L	1.0	SW846 8260B			9/6/19 18:10	TMP	J
cis-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			9/6/19 18:10	TMP	J
trans-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			9/6/19 18:10	TMP	J
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			9/6/19 18:10	TMP	J
2-Hexanone	ND		ug/L	5.0	SW846 8260B			9/6/19 18:10	TMP	J
Iodomethane	ND		ug/L	1.0	SW846 8260B			9/6/19 18:10	TMP	J
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	SW846 8260B			9/6/19 18:10	TMP	J

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ANALYTICAL RESULTS

Workorder: 3054916 3RD QTR 2019 FFMH-FORM 50

 Lab ID: **3054916002**
 Sample ID: **FFMH03SS**

 Date Collected: 8/29/2019 10:15 Matrix: Water
 Date Received: 8/29/2019 14:50

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			9/6/19 18:10	TMP	J
Styrene	ND		ug/L	1.0	SW846 8260B			9/6/19 18:10	TMP	J
1,1,1,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			9/6/19 18:10	TMP	J
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			9/6/19 18:10	TMP	J
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			9/6/19 18:10	TMP	J
Toluene	ND		ug/L	1.0	SW846 8260B			9/6/19 18:10	TMP	J
Total Xylenes	ND		ug/L	3.0	SW846 8260B			9/6/19 18:10	TMP	J
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			9/6/19 18:10	TMP	J
1,1,2-Trichloroethane	ND		ug/L	1.0	SW846 8260B			9/6/19 18:10	TMP	J
Trichloroethene	ND		ug/L	1.0	SW846 8260B			9/6/19 18:10	TMP	J
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			9/6/19 18:10	TMP	J
1,2,3-Trichloropropane	ND		ug/L	2.0	SW846 8260B			9/6/19 18:10	TMP	J
Vinyl Acetate	ND		ug/L	5.0	SW846 8260B			9/6/19 18:10	TMP	J
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			9/6/19 18:10	TMP	J
o-Xylene	ND		ug/L	1.0	SW846 8260B			9/6/19 18:10	TMP	J
mp-Xylene	ND		ug/L	2.0	SW846 8260B			9/6/19 18:10	TMP	J
Surrogate Recoveries	Results	Flag	Units	Limits	Method	Prepared	By	Analyzed	By	Cntr
1,2-Dichloroethane-d4 (S)	99.9		%	62 - 133	SW846 8260B			9/6/19 18:10	TMP	J
4-Bromofluorobenzene (S)	111		%	79 - 114	SW846 8260B			9/6/19 18:10	TMP	J
Dibromofluoromethane (S)	97.4		%	78 - 116	SW846 8260B			9/6/19 18:10	TMP	J
Toluene-d8 (S)	97.5		%	76 - 127	SW846 8260B			9/6/19 18:10	TMP	J
LIBRARY SEARCH - VOLATILES										
No TIC's Detected					Lib Search VOC			9/6/19 18:10	CPK	I
WET CHEMISTRY										
Alkalinity, Bicarbonate	36		mg/L	5	SM2320B-2011			9/4/19 09:12	MBW	B
Alkalinity, Total	36	3	mg/L	5	SM2320B-2011			9/4/19 09:12	MBW	B
Ammonia-N	104		mg/L	0.500	D6919-09			9/9/19 22:01	AK	F
Chemical Oxygen Demand (COD)	563		mg/L	75	EPA 410.4			9/6/19 17:22	AK	F
Chloride	3440		mg/L	250	EPA 300.0			8/30/19 11:26	CHW	B
Fluoride	ND	2	mg/L	1.0	EPA 300.0			8/30/19 11:10	CHW	B
Nitrate-N	195		mg/L	25.0	EPA 300.0			8/30/19 11:26	CHW	B
pH	6.03	1	pH_Units		S4500HB-11			9/4/19 09:12	MBW	B
Phenolics	ND		mg/L	0.005	SW846 9066	9/3/19 09:17	C_D	9/4/19 09:17	C_D	H
Specific Conductance	11300		umhos/cm	1	SW846 9050A			9/4/19 09:12	MBW	B
Sulfate	688		mg/L	10.0	EPA 300.0			8/30/19 11:10	CHW	B
Total Dissolved Solids	8560		mg/L	5	S2540C-11			9/5/19 14:42	D1C	B

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ANALYTICAL RESULTS

Workorder: 3054916 3RD QTR 2019 FFMH-FORM 50

Lab ID: **3054916002**

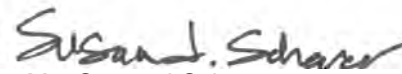
Date Collected: 8/29/2019 10:15

Matrix: Water

Sample ID: **FFMH03SS**

Date Received: 8/29/2019 14:50

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Total Organic Carbon (TOC)	135		mg/L	12.5	SW846 9060A			9/4/19 23:10	PAG	C
Turbidity	3.80		NTU	0.10	SM2130B-2011			8/31/19 06:36	R2B	B
METALS										
Antimony, Total	ND		mg/L	0.22	SW846 6010C	9/3/19 17:20	AHI	9/10/19 15:26	SRT	G1
Arsenic, Total	ND		mg/L	0.090	SW846 6010C	9/3/19 17:20	AHI	9/10/19 15:26	SRT	G1
Barium, Total	0.20		mg/L	0.11	SW846 6010C	9/3/19 17:20	AHI	9/10/19 15:26	SRT	G1
Beryllium, Total	ND		mg/L	0.044	SW846 6010C	9/3/19 17:20	AHI	9/10/19 15:26	SRT	G1
Cadmium, Total	ND		mg/L	0.022	SW846 6010C	9/3/19 17:20	AHI	9/10/19 15:26	SRT	G1
Calcium, Total	283		mg/L	1.1	SW846 6010C	9/3/19 17:20	AHI	9/10/19 15:26	SRT	G1
Chromium, Total	ND		mg/L	0.056	SW846 6010C	9/3/19 17:20	AHI	9/10/19 15:26	SRT	G1
Cobalt, Total	ND		mg/L	0.056	SW846 6010C	9/3/19 17:20	AHI	9/10/19 15:26	SRT	G1
Copper, Total	ND		mg/L	0.11	SW846 6010C	9/3/19 17:20	AHI	9/10/19 15:26	SRT	G1
Iron, Total	1.8		mg/L	0.67	SW846 6010C	9/3/19 17:20	AHI	9/10/19 15:26	SRT	G1
Lead, Total	ND		mg/L	0.067	SW846 6010C	9/3/19 17:20	AHI	9/10/19 15:26	SRT	G1
Magnesium, Total	193		mg/L	1.1	SW846 6010C	9/3/19 17:20	AHI	9/10/19 15:26	SRT	G1
Manganese, Total	2.9		mg/L	0.056	SW846 6010C	9/3/19 17:20	AHI	9/10/19 15:26	SRT	G1
Mercury, Total	ND		mg/L	0.00050	SW846 7470A	9/4/19 10:00	AHI	9/4/19 13:10	AHI	G
Nickel, Total	ND		mg/L	0.22	SW846 6010C	9/3/19 17:20	AHI	9/10/19 15:26	SRT	G1
Potassium, Total	267		mg/L	5.6	SW846 6010C	9/3/19 17:20	AHI	9/10/19 15:26	SRT	G1
Selenium, Total	ND		mg/L	0.22	SW846 6010C	9/3/19 17:20	AHI	9/10/19 15:26	SRT	G1
Silver, Total	ND		mg/L	0.044	SW846 6010C	9/3/19 17:20	AHI	9/10/19 15:26	SRT	G1
Sodium, Total	1700		mg/L	5.6	SW846 6010C	9/3/19 17:20	AHI	9/10/19 15:26	SRT	G1
Thallium, Total	ND		mg/L	0.22	SW846 6010C	9/3/19 17:20	AHI	9/10/19 15:26	SRT	G1
Vanadium, Total	ND		mg/L	0.056	SW846 6010C	9/3/19 17:20	AHI	9/10/19 15:26	SRT	G1
Zinc, Total	0.25		mg/L	0.22	SW846 6010C	9/3/19 17:20	AHI	9/10/19 15:26	SRT	G1
FIELD PARAMETERS										
pH, Field (SM4500B)	5.78		pH_Units		S4500HB-11			8/29/19 10:15	CLT	A
Specific Conductance, Field	10530		umhos/cm	1	SM2510B-2011			8/29/19 10:15	CLT	A



Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3054916 3RD QTR 2019 FFMH-FORM 50

 Lab ID: **3054916003**

Date Collected: 8/29/2019 09:50

Matrix: Water

 Sample ID: **FFMH05SS**

Date Received: 8/29/2019 14:50

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	SW846 8260B			9/6/19 18:33	TMP	J
Acrylonitrile	ND		ug/L	5.0	SW846 8260B			9/6/19 18:33	TMP	J
Benzene	ND		ug/L	1.0	SW846 8260B			9/6/19 18:33	TMP	J
Bromochloromethane	ND		ug/L	1.0	SW846 8260B			9/6/19 18:33	TMP	J
Bromodichloromethane	ND		ug/L	1.0	SW846 8260B			9/6/19 18:33	TMP	J
Bromoform	ND		ug/L	1.0	SW846 8260B			9/6/19 18:33	TMP	J
Bromomethane	ND		ug/L	1.0	SW846 8260B			9/6/19 18:33	TMP	J
2-Butanone	ND		ug/L	10.0	SW846 8260B			9/6/19 18:33	TMP	J
Carbon Disulfide	ND		ug/L	1.0	SW846 8260B			9/6/19 18:33	TMP	J
Carbon Tetrachloride	ND		ug/L	1.0	SW846 8260B			9/6/19 18:33	TMP	J
Chlorobenzene	ND		ug/L	1.0	SW846 8260B			9/6/19 18:33	TMP	J
Chlorodibromomethane	ND		ug/L	1.0	SW846 8260B			9/6/19 18:33	TMP	J
Chloroethane	ND		ug/L	1.0	SW846 8260B			9/6/19 18:33	TMP	J
Chloroform	ND		ug/L	1.0	SW846 8260B			9/6/19 18:33	TMP	J
Chloromethane	ND		ug/L	1.0	SW846 8260B			9/6/19 18:33	TMP	J
3-Chloro-1-propene	ND		ug/L	1.0	SW846 8260B			9/6/19 18:33	TMP	J
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	SW846 8260B			9/6/19 18:33	TMP	J
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			9/6/19 18:33	TMP	J
Dibromomethane	ND		ug/L	1.0	SW846 8260B			9/6/19 18:33	TMP	J
trans-1,4-Dichloro-2-butene	ND		ug/L	3.0	SW846 8260B			9/6/19 18:33	TMP	J
1,2-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			9/6/19 18:33	TMP	J
1,3-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			9/6/19 18:33	TMP	J
1,4-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			9/6/19 18:33	TMP	J
Dichlorodifluoromethane	ND		ug/L	1.0	SW846 8260B			9/6/19 18:33	TMP	J
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			9/6/19 18:33	TMP	J
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			9/6/19 18:33	TMP	J
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			9/6/19 18:33	TMP	J
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			9/6/19 18:33	TMP	J
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			9/6/19 18:33	TMP	J
1,2-Dichloropropane	ND		ug/L	1.0	SW846 8260B			9/6/19 18:33	TMP	J
cis-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			9/6/19 18:33	TMP	J
trans-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			9/6/19 18:33	TMP	J
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			9/6/19 18:33	TMP	J
2-Hexanone	ND		ug/L	5.0	SW846 8260B			9/6/19 18:33	TMP	J
Iodomethane	ND		ug/L	1.0	SW846 8260B			9/6/19 18:33	TMP	J
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	SW846 8260B			9/6/19 18:33	TMP	J

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ANALYTICAL RESULTS

Workorder: 3054916 3RD QTR 2019 FFMH-FORM 50

 Lab ID: **3054916003**

Date Collected: 8/29/2019 09:50

Matrix: Water

 Sample ID: **FFMH05SS**

Date Received: 8/29/2019 14:50

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			9/6/19 18:33	TMP	J
Styrene	ND		ug/L	1.0	SW846 8260B			9/6/19 18:33	TMP	J
1,1,1,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			9/6/19 18:33	TMP	J
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			9/6/19 18:33	TMP	J
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			9/6/19 18:33	TMP	J
Toluene	ND		ug/L	1.0	SW846 8260B			9/6/19 18:33	TMP	J
Total Xylenes	ND		ug/L	3.0	SW846 8260B			9/6/19 18:33	TMP	J
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			9/6/19 18:33	TMP	J
1,1,2-Trichloroethane	ND		ug/L	1.0	SW846 8260B			9/6/19 18:33	TMP	J
Trichloroethene	ND		ug/L	1.0	SW846 8260B			9/6/19 18:33	TMP	J
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			9/6/19 18:33	TMP	J
1,2,3-Trichloropropane	ND		ug/L	2.0	SW846 8260B			9/6/19 18:33	TMP	J
Vinyl Acetate	ND		ug/L	5.0	SW846 8260B			9/6/19 18:33	TMP	J
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			9/6/19 18:33	TMP	J
o-Xylene	ND		ug/L	1.0	SW846 8260B			9/6/19 18:33	TMP	J
mp-Xylene	ND		ug/L	2.0	SW846 8260B			9/6/19 18:33	TMP	J
Surrogate Recoveries	Results	Flag	Units	Limits	Method	Prepared	By	Analyzed	By	Cntr
1,2-Dichloroethane-d4 (S)	100		%	62 - 133	SW846 8260B			9/6/19 18:33	TMP	J
4-Bromofluorobenzene (S)	111		%	79 - 114	SW846 8260B			9/6/19 18:33	TMP	J
Dibromofluoromethane (S)	98		%	78 - 116	SW846 8260B			9/6/19 18:33	TMP	J
Toluene-d8 (S)	98.6		%	76 - 127	SW846 8260B			9/6/19 18:33	TMP	J
LIBRARY SEARCH - VOLATILES										
No TIC's Detected					Lib Search VOC			9/6/19 18:33	CPK	I
WET CHEMISTRY										
Alkalinity, Bicarbonate	616		mg/L	5	SM2320B-2011			9/4/19 09:25	MBW	B
Alkalinity, Total	705	2	mg/L	5	SM2320B-2011			9/4/19 09:25	MBW	B
Ammonia-N	2.19		mg/L	0.100	D6919-09			9/11/19 19:21	AK	F
Chemical Oxygen Demand (COD)	25		mg/L	15	EPA 410.4			9/4/19 19:56	AK	F
Chloride	494		mg/L	25.0	EPA 300.0			8/31/19 15:42	CHW	B
Fluoride	0.60		mg/L	0.50	EPA 300.0			8/30/19 11:41	CHW	B
Nitrate-N	6.0		mg/L	0.50	EPA 300.0			8/30/19 11:41	CHW	B
pH	8.78	1	pH_Units		S4500HB-11			9/4/19 09:25	MBW	B
Phenolics	ND		mg/L	0.005	SW846 9066	9/3/19 09:17	C_D	9/4/19 09:17	C_D	H
Specific Conductance	3450		umhos/cm	1	SW846 9050A			9/4/19 09:25	MBW	B
Sulfate	375		mg/L	5.0	EPA 300.0			8/30/19 11:41	CHW	B
Total Dissolved Solids	2240		mg/L	5	S2540C-11			9/5/19 14:42	D1C	B

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ANALYTICAL RESULTS

Workorder: 3054916 3RD QTR 2019 FFMH-FORM 50

Lab ID: **3054916003**

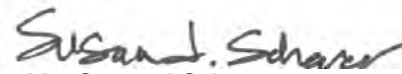
Date Collected: 8/29/2019 09:50

Matrix: Water

Sample ID: **FFMH05SS**

Date Received: 8/29/2019 14:50

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Total Organic Carbon (TOC)	8.6		mg/L	2.5	SW846 9060A			9/4/19 08:19	PAG	C
Turbidity	1.04		NTU	0.10	SM2130B-2011			8/31/19 06:36	R2B	B
METALS										
Antimony, Total	ND		mg/L	0.022	SW846 6010C	9/4/19 19:45	SXC	9/9/19 12:37	MNP	G1
Arsenic, Total	0.018		mg/L	0.0090	SW846 6010C	9/4/19 19:45	SXC	9/9/19 12:37	MNP	G1
Barium, Total	0.020		mg/L	0.011	SW846 6010C	9/4/19 19:45	SXC	9/9/19 12:37	MNP	G1
Beryllium, Total	ND		mg/L	0.0044	SW846 6010C	9/4/19 19:45	SXC	9/9/19 12:37	MNP	G1
Cadmium, Total	ND		mg/L	0.0022	SW846 6010C	9/4/19 19:45	SXC	9/9/19 12:37	MNP	G1
Calcium, Total	20.9		mg/L	0.11	SW846 6010C	9/4/19 19:45	SXC	9/9/19 12:37	MNP	G1
Chromium, Total	ND		mg/L	0.0056	SW846 6010C	9/4/19 19:45	SXC	9/9/19 12:37	MNP	G1
Cobalt, Total	ND		mg/L	0.0056	SW846 6010C	9/4/19 19:45	SXC	9/9/19 12:37	MNP	G1
Copper, Total	0.014		mg/L	0.011	SW846 6010C	9/4/19 19:45	SXC	9/9/19 12:37	MNP	G1
Iron, Total	0.11		mg/L	0.067	SW846 6010C	9/4/19 19:45	SXC	9/9/19 12:37	MNP	G1
Lead, Total	ND		mg/L	0.0067	SW846 6010C	9/4/19 19:45	SXC	9/9/19 12:37	MNP	G1
Magnesium, Total	6.0		mg/L	0.11	SW846 6010C	9/4/19 19:45	SXC	9/9/19 12:37	MNP	G1
Manganese, Total	0.0099		mg/L	0.0056	SW846 6010C	9/4/19 19:45	SXC	9/9/19 12:37	MNP	G1
Mercury, Total	ND		mg/L	0.00050	SW846 7470A	9/4/19 10:00	AHI	9/4/19 13:11	AHI	G
Nickel, Total	ND		mg/L	0.022	SW846 6010C	9/4/19 19:45	SXC	9/9/19 12:37	MNP	G1
Potassium, Total	9.0		mg/L	0.56	SW846 6010C	9/4/19 19:45	SXC	9/9/19 12:37	MNP	G1
Selenium, Total	ND		mg/L	0.022	SW846 6010C	9/4/19 19:45	SXC	9/9/19 12:37	MNP	G1
Silver, Total	ND		mg/L	0.0044	SW846 6010C	9/4/19 19:45	SXC	9/9/19 12:37	MNP	G1
Sodium, Total	705		mg/L	0.56	SW846 6010C	9/4/19 19:45	SXC	9/9/19 12:37	MNP	G1
Thallium, Total	ND		mg/L	0.022	SW846 6010C	9/4/19 19:45	SXC	9/9/19 12:37	MNP	G1
Vanadium, Total	ND		mg/L	0.0056	SW846 6010C	9/4/19 19:45	SXC	9/9/19 12:37	MNP	G1
Zinc, Total	ND		mg/L	0.022	SW846 6010C	9/4/19 19:45	SXC	9/9/19 12:37	MNP	G1
FIELD PARAMETERS										
pH, Field (SM4500B)	8.46		pH_Units		S4500HB-11			8/29/19 09:50	CLT	A
Specific Conductance, Field	3400		umhos/cm	1	SM2510B-2011			8/29/19 09:50	CLT	A



Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3054916 3RD QTR 2019 FFMH-FORM 50

Lab ID: **3054916004** Date Collected: 8/29/2019 09:30 Matrix: Water
 Sample ID: **FFMH06SS** Date Received: 8/29/2019 14:50

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	10.2		ug/L	10.0	SW846 8260B			9/5/19 04:54	PDK	I
Acrylonitrile	ND		ug/L	5.0	SW846 8260B			9/5/19 04:54	PDK	I
Benzene	ND		ug/L	1.0	SW846 8260B			9/5/19 04:54	PDK	I
Bromochloromethane	ND		ug/L	1.0	SW846 8260B			9/5/19 04:54	PDK	I
Bromodichloromethane	ND		ug/L	1.0	SW846 8260B			9/5/19 04:54	PDK	I
Bromoform	ND		ug/L	1.0	SW846 8260B			9/5/19 04:54	PDK	I
Bromomethane	ND		ug/L	1.0	SW846 8260B			9/5/19 04:54	PDK	I
2-Butanone	ND		ug/L	10.0	SW846 8260B			9/5/19 04:54	PDK	I
Carbon Disulfide	ND		ug/L	1.0	SW846 8260B			9/5/19 04:54	PDK	I
Carbon Tetrachloride	ND		ug/L	1.0	SW846 8260B			9/5/19 04:54	PDK	I
Chlorobenzene	ND		ug/L	1.0	SW846 8260B			9/5/19 04:54	PDK	I
Chlorodibromomethane	ND		ug/L	1.0	SW846 8260B			9/5/19 04:54	PDK	I
Chloroethane	ND		ug/L	1.0	SW846 8260B			9/5/19 04:54	PDK	I
Chloroform	ND		ug/L	1.0	SW846 8260B			9/5/19 04:54	PDK	I
Chloromethane	ND		ug/L	1.0	SW846 8260B			9/5/19 04:54	PDK	I
3-Chloro-1-propene	ND		ug/L	1.0	SW846 8260B			9/5/19 04:54	PDK	I
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	SW846 8260B			9/5/19 04:54	PDK	I
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			9/5/19 04:54	PDK	I
Dibromomethane	ND		ug/L	1.0	SW846 8260B			9/5/19 04:54	PDK	I
trans-1,4-Dichloro-2-butene	ND		ug/L	3.0	SW846 8260B			9/5/19 04:54	PDK	I
1,2-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			9/5/19 04:54	PDK	I
1,3-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			9/5/19 04:54	PDK	I
1,4-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			9/5/19 04:54	PDK	I
Dichlorodifluoromethane	ND		ug/L	1.0	SW846 8260B			9/5/19 04:54	PDK	I
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			9/5/19 04:54	PDK	I
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			9/5/19 04:54	PDK	I
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			9/5/19 04:54	PDK	I
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			9/5/19 04:54	PDK	I
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			9/5/19 04:54	PDK	I
1,2-Dichloropropane	ND		ug/L	1.0	SW846 8260B			9/5/19 04:54	PDK	I
cis-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			9/5/19 04:54	PDK	I
trans-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			9/5/19 04:54	PDK	I
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			9/5/19 04:54	PDK	I
2-Hexanone	ND		ug/L	5.0	SW846 8260B			9/5/19 04:54	PDK	I
Iodomethane	ND		ug/L	1.0	SW846 8260B			9/5/19 04:54	PDK	I
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	SW846 8260B			9/5/19 04:54	PDK	I

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ANALYTICAL RESULTS

Workorder: 3054916 3RD QTR 2019 FFMH-FORM 50

 Lab ID: **3054916004**

Date Collected: 8/29/2019 09:30

Matrix: Water

 Sample ID: **FFMH06SS**

Date Received: 8/29/2019 14:50

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			9/5/19 04:54	PDK	I
Styrene	ND		ug/L	1.0	SW846 8260B			9/5/19 04:54	PDK	I
1,1,1,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			9/5/19 04:54	PDK	I
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			9/5/19 04:54	PDK	I
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			9/5/19 04:54	PDK	I
Toluene	ND		ug/L	1.0	SW846 8260B			9/5/19 04:54	PDK	I
Total Xylenes	ND		ug/L	3.0	SW846 8260B			9/5/19 04:54	PDK	I
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			9/5/19 04:54	PDK	I
1,1,2-Trichloroethane	ND		ug/L	1.0	SW846 8260B			9/5/19 04:54	PDK	I
Trichloroethene	ND		ug/L	1.0	SW846 8260B			9/5/19 04:54	PDK	I
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			9/5/19 04:54	PDK	I
1,2,3-Trichloropropane	ND		ug/L	2.0	SW846 8260B			9/5/19 04:54	PDK	I
Vinyl Acetate	ND		ug/L	5.0	SW846 8260B			9/5/19 04:54	PDK	I
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			9/5/19 04:54	PDK	I
o-Xylene	ND		ug/L	1.0	SW846 8260B			9/5/19 04:54	PDK	I
mp-Xylene	ND		ug/L	2.0	SW846 8260B			9/5/19 04:54	PDK	I
Surrogate Recoveries	Results	Flag	Units	Limits	Method	Prepared	By	Analyzed	By	Cntr
1,2-Dichloroethane-d4 (S)	133		%	62 - 133	SW846 8260B			9/5/19 04:54	PDK	I
4-Bromofluorobenzene (S)	98.3		%	79 - 114	SW846 8260B			9/5/19 04:54	PDK	I
Dibromofluoromethane (S)	109		%	78 - 116	SW846 8260B			9/5/19 04:54	PDK	I
Toluene-d8 (S)	105		%	76 - 127	SW846 8260B			9/5/19 04:54	PDK	I
LIBRARY SEARCH - VOLATILES										
No TIC's Detected					Lib Search VOC			9/4/19 04:54	CPK	I
WET CHEMISTRY										
Alkalinity, Bicarbonate	191		mg/L	5	SM2320B-2011			9/4/19 09:35	MBW	B
Alkalinity, Total	191	2	mg/L	5	SM2320B-2011			9/4/19 09:35	MBW	B
Ammonia-N	ND		mg/L	0.100	D6919-09			9/7/19 16:56	AK	F
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			9/4/19 19:56	AK	F
Chloride	127		mg/L	2.0	EPA 300.0			8/30/19 13:31	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			8/30/19 13:31	CHW	B
Nitrate-N	1.7		mg/L	0.20	EPA 300.0			8/30/19 13:31	CHW	B
pH	8.09	1	pH_Units		S4500HB-11			9/4/19 09:35	MBW	B
Phenolics	ND		mg/L	0.005	SW846 9066	9/3/19 09:17	C_D	9/4/19 09:17	C_D	H
Specific Conductance	1290		umhos/cm	1	SW846 9050A			9/4/19 09:35	MBW	B
Sulfate	276		mg/L	5.0	EPA 300.0			8/31/19 15:55	CHW	B
Total Dissolved Solids	869		mg/L	5	S2540C-11			9/5/19 14:42	D1C	B

ALS Environmental Laboratory Locations Across North America

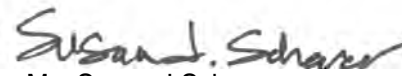
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ANALYTICAL RESULTS

Workorder: 3054916 3RD QTR 2019 FFMH-FORM 50

Lab ID: **3054916004** Date Collected: 8/29/2019 09:30 Matrix: Water
Sample ID: **FFMH06SS** Date Received: 8/29/2019 14:50

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Total Organic Carbon (TOC)	2.5		mg/L	0.50	SW846 9060A			9/4/19 08:19	PAG	C
Turbidity	0.67		NTU	0.10	SM2130B-2011			8/31/19 06:36	R2B	B
METALS										
Antimony, Total	ND		mg/L	0.022	SW846 6010C	9/4/19 19:45	SXC	9/9/19 12:47	MNP	G1
Arsenic, Total	ND		mg/L	0.0090	SW846 6010C	9/4/19 19:45	SXC	9/9/19 12:47	MNP	G1
Barium, Total	0.039		mg/L	0.011	SW846 6010C	9/4/19 19:45	SXC	9/9/19 12:47	MNP	G1
Beryllium, Total	ND		mg/L	0.0044	SW846 6010C	9/4/19 19:45	SXC	9/9/19 12:47	MNP	G1
Cadmium, Total	ND		mg/L	0.0022	SW846 6010C	9/4/19 19:45	SXC	9/9/19 12:47	MNP	G1
Calcium, Total	94.8		mg/L	0.11	SW846 6010C	9/4/19 19:45	SXC	9/9/19 12:47	MNP	G1
Chromium, Total	ND		mg/L	0.0056	SW846 6010C	9/4/19 19:45	SXC	9/9/19 12:47	MNP	G1
Cobalt, Total	ND		mg/L	0.0056	SW846 6010C	9/4/19 19:45	SXC	9/9/19 12:47	MNP	G1
Copper, Total	ND		mg/L	0.011	SW846 6010C	9/4/19 19:45	SXC	9/9/19 12:47	MNP	G1
Iron, Total	ND		mg/L	0.067	SW846 6010C	9/4/19 19:45	SXC	9/9/19 12:47	MNP	G1
Lead, Total	ND		mg/L	0.0067	SW846 6010C	9/4/19 19:45	SXC	9/9/19 12:47	MNP	G1
Magnesium, Total	28.4		mg/L	0.11	SW846 6010C	9/4/19 19:45	SXC	9/9/19 12:47	MNP	G1
Manganese, Total	ND		mg/L	0.0056	SW846 6010C	9/4/19 19:45	SXC	9/9/19 12:47	MNP	G1
Mercury, Total	ND		mg/L	0.00050	SW846 7470A	9/4/19 10:00	AHI	9/4/19 13:12	AHI	G
Nickel, Total	ND		mg/L	0.022	SW846 6010C	9/4/19 19:45	SXC	9/9/19 12:47	MNP	G1
Potassium, Total	22.5		mg/L	0.56	SW846 6010C	9/4/19 19:45	SXC	9/9/19 12:47	MNP	G1
Selenium, Total	ND		mg/L	0.022	SW846 6010C	9/4/19 19:45	SXC	9/9/19 12:47	MNP	G1
Silver, Total	0.0059		mg/L	0.0044	SW846 6010C	9/4/19 19:45	SXC	9/9/19 12:47	MNP	G1
Sodium, Total	137		mg/L	0.56	SW846 6010C	9/4/19 19:45	SXC	9/9/19 12:47	MNP	G1
Thallium, Total	ND		mg/L	0.022	SW846 6010C	9/4/19 19:45	SXC	9/9/19 12:47	MNP	G1
Vanadium, Total	ND		mg/L	0.0056	SW846 6010C	9/4/19 19:45	SXC	9/9/19 12:47	MNP	G1
Zinc, Total	ND		mg/L	0.022	SW846 6010C	9/4/19 19:45	SXC	9/9/19 12:47	MNP	G1
FIELD PARAMETERS										
pH, Field (SM4500B)	7.45		pH_Units		S4500HB-11			8/29/19 09:30	CLT	A
Specific Conductance, Field	1238		umhos/cm	1	SM2510B-2011			8/29/19 09:30	CLT	A



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Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3054916 3RD QTR 2019 FFMH-FORM 50

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
3054916001	1	FFMH01SS	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
3054916001	2	FFMH01SS	EPA 300.0	Fluoride
Due to sample matrix interferences, this analyte was analyzed at a dilution and the detection levels adjusted accordingly.				
3054916001	3	FFMH01SS	EPA 300.0	Nitrate-N
Due to sample matrix interferences, this analyte was analyzed at a dilution and the detection levels adjusted accordingly.				
3054916001	4	FFMH01SS	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
3054916002	1	FFMH03SS	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
3054916002	2	FFMH03SS	EPA 300.0	Fluoride
Due to sample matrix interferences, this analyte was analyzed at a dilution and the detection levels adjusted accordingly.				
3054916002	3	FFMH03SS	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
3054916003	1	FFMH05SS	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
3054916003	2	FFMH05SS	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
3054916004	1	FFMH06SS	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
3054916004	2	FFMH06SS	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				

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ANALYSIS - PREP METHOD CROSS REFERENCE TABLE

Workorder: 3054916 3RD QTR 2019 FFMH-FORM 50

Lab ID	Sample ID	Analysis Method	Prep Method
3054916001	FFMH01SS	D6919-09	
3054916001	FFMH01SS	EPA 300.0	
3054916001	FFMH01SS	EPA 410.4	
3054916001	FFMH01SS	Lib Search VOC	
3054916001	FFMH01SS	S2540C-11	
3054916001	FFMH01SS	S4500HB-11	
3054916001	FFMH01SS	SM2130B-2011	
3054916001	FFMH01SS	SM2320B-2011	
3054916001	FFMH01SS	SM2510B-2011	
3054916001	FFMH01SS	SW846 6010C	SW846 3015
3054916001	FFMH01SS	SW846 7470A	SW846 7470A
3054916001	FFMH01SS	SW846 8260B	
3054916001	FFMH01SS	SW846 9050A	
3054916001	FFMH01SS	SW846 9060A	
3054916001	FFMH01SS	SW846 9066	420.4/9066
3054916002	FFMH03SS	D6919-09	
3054916002	FFMH03SS	EPA 300.0	
3054916002	FFMH03SS	EPA 410.4	
3054916002	FFMH03SS	Lib Search VOC	
3054916002	FFMH03SS	S2540C-11	
3054916002	FFMH03SS	S4500HB-11	
3054916002	FFMH03SS	SM2130B-2011	
3054916002	FFMH03SS	SM2320B-2011	
3054916002	FFMH03SS	SM2510B-2011	
3054916002	FFMH03SS	SW846 6010C	SW846 3015
3054916002	FFMH03SS	SW846 7470A	SW846 7470A
3054916002	FFMH03SS	SW846 8260B	
3054916002	FFMH03SS	SW846 9050A	
3054916002	FFMH03SS	SW846 9060A	
3054916002	FFMH03SS	SW846 9066	420.4/9066
3054916003	FFMH05SS	D6919-09	
3054916003	FFMH05SS	EPA 300.0	
3054916003	FFMH05SS	EPA 410.4	
3054916003	FFMH05SS	Lib Search VOC	
3054916003	FFMH05SS	S2540C-11	
3054916003	FFMH05SS	S4500HB-11	
3054916003	FFMH05SS	SM2130B-2011	
3054916003	FFMH05SS	SM2320B-2011	
3054916003	FFMH05SS	SM2510B-2011	
3054916003	FFMH05SS	SW846 6010C	SW846 3015
3054916003	FFMH05SS	SW846 7470A	SW846 7470A
3054916003	FFMH05SS	SW846 8260B	
3054916003	FFMH05SS	SW846 9050A	
3054916003	FFMH05SS	SW846 9060A	
3054916003	FFMH05SS	SW846 9066	420.4/9066
3054916004	FFMH06SS	D6919-09	

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ANALYSIS - PREP METHOD CROSS REFERENCE TABLE

Workorder: 3054916 3RD QTR 2019 FFMH-FORM 50

Lab ID	Sample ID	Analysis Method	Prep Method
3054916004	FFMH06SS	EPA 300.0	
3054916004	FFMH06SS	EPA 410.4	
3054916004	FFMH06SS	Lib Search VOC	
3054916004	FFMH06SS	S2540C-11	
3054916004	FFMH06SS	S4500HB-11	
3054916004	FFMH06SS	SM2130B-2011	
3054916004	FFMH06SS	SM2320B-2011	
3054916004	FFMH06SS	SM2510B-2011	
3054916004	FFMH06SS	SW846 6010C	SW846 3015
3054916004	FFMH06SS	SW846 7470A	SW846 7470A
3054916004	FFMH06SS	SW846 8260B	
3054916004	FFMH06SS	SW846 9050A	
3054916004	FFMH06SS	SW846 9060A	
3054916004	FFMH06SS	SW846 9066	420.4/9066

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34 Dogwood Lane
 Middletown, PA 17057
 P: 717-944-5541
 F: 717-944-1430



Environmental

Client Name: LCSWMA
Address: 1299 Harrisburg Pike
 Lancaster PA 17604
Contact: Nick Rogers
Phone#: (717) 874-4428
Project Name#:
Bill To:

Normal-Standard TAT is 10-12 business days.
 Rush-Subject to ALS approval and surcharges.
Date Required: Approved By:
Email? -Y
Fax? -Y No.:

Sample	Date	Time
FFMH01SS	8/29/2019	10:05
FFMH03SS	8/29/2019	10:15
FFMH05SS	8/29/2019	9:50
FFMH06SS	8/29/2019	9:30

CO AL



3 0 5 4 9 1 6 *
 .eiving Lab)

Cooler Temp: 4 Therm ID: 4017
 No. of Coolers: Y N Initial
 Custody Seats Present?
 (If present) Seals intact?
 Received on ice?
 COCLabels Completed/Accurate?
 Cont. in Good Cond.?
 Correct Containers?
 Correct Sample Volumes?
 Correct Preservation?
 Headpace/Volatilities?
 Courier/Tracking #:

ANALYSES/METHOD REQUESTED

Matrix	ALK, HCO3	Cl, pH, SPC, SO4, F, NO3, TDS, TB	NH3, COD	O-OH	Total metals-form 50	TOC	8260-form 50 (+ library search)	Field pH	Field SpC
G WW	1	1	1	1	1	2	2	6.48	46900
G WW	1	1	1	1	1	2	2	5.78	10530
G WW	1	1	1	1	1	2	2	8.46	3400
G WW	1	1	1	1	1	2	2	7.45	1238

Enter Number of Containers Per Sample or Field Results Below.

Matrix	ALK, HCO3	Cl, pH, SPC, SO4, F, NO3, TDS, TB	NH3, COD	O-OH	Total metals-form 50	TOC	8260-form 50 (+ library search)	Field pH	Field SpC
G WW	1	1	1	1	1	2	2	6.48	46900
G WW	1	1	1	1	1	2	2	5.78	10530
G WW	1	1	1	1	1	2	2	8.46	3400
G WW	1	1	1	1	1	2	2	7.45	1238

Sample/COC Comments

ALS Field Services: Pickup Labor
 Composite Sampling Rental Equipment
 Other:

Project Comments:	Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
1	Andrew Salladay LCSWMA	8/29/19	10:38	[Signature]	8/29/19	11:00
2	[Signature]	8/29/19	14:50	[Signature]	8/29/19	14:50
3	[Signature]	8/29/19	14:50	[Signature]	8/29/19	14:50
4	[Signature]	8/29/19	14:50	[Signature]	8/29/19	14:50
5	[Signature]	8/29/19	14:50	[Signature]	8/29/19	14:50
6	[Signature]	8/29/19	14:50	[Signature]	8/29/19	14:50
7	[Signature]	8/29/19	14:50	[Signature]	8/29/19	14:50
8	[Signature]	8/29/19	14:50	[Signature]	8/29/19	14:50
9	[Signature]	8/29/19	14:50	[Signature]	8/29/19	14:50

Standard
 CLP-like
 USACE
 State Samples Collected In
 USACE Navy NY NJ PA NC
 Special Processing
 Reportable to PADEP?
 Yes
 PWSID #
 EBS: Format Type

LOGGED BY (signature):
 REVIEWED BY (signature):

Matrix: AL=Air; DW=Drinking Water; GW=Groundwater; O=Oil; DL=Other Liquid; SL=Sludge; SO=Soil; WP=Wipe; WW=Wastewater

ALS ENVIRONMENTAL SHIPPING ADDRESS: 34 DOGWOOD LANE, MIDDLETOWN, PA 17057

Rev 10/14





301 Fulling Mill Road
 Middletown, PA 17057
 P: (717) 944-5541
 F: (717) 944-1430

Condition of Sample Receipt Form

Client: LCSWMA Work Order #: 3054916 Initials: DN Date: 8/30

- | | | | |
|--|---------------------------------------|---------------------------|-------------------------------------|
| 1. Were airbills / tracking numbers present and recorded?..... | <input checked="" type="radio"/> NONE | <input type="radio"/> YES | <input type="radio"/> NO |
| Tracking number: _____ | | | |
| 2. Are Custody Seals on shipping containers intact?..... | <input checked="" type="radio"/> NONE | <input type="radio"/> YES | <input type="radio"/> NO |
| 3. Are Custody Seals on sample containers intact?..... | <input checked="" type="radio"/> NONE | <input type="radio"/> YES | <input type="radio"/> NO |
| 4. Is there a COC (Chain-of-Custody) present?..... | <input type="radio"/> YES | <input type="radio"/> NO | |
| 5. Are the COC and bottle labels complete, legible and in agreement?..... | <input checked="" type="radio"/> YES | <input type="radio"/> NO | |
| 5a. Does the COC contain sample locations?..... | <input checked="" type="radio"/> YES | <input type="radio"/> NO | |
| 5b. Does the COC contain date and time of sample collection for all samples?..... | <input checked="" type="radio"/> YES | <input type="radio"/> NO | |
| 5c. Does the COC contain sample collectors name?..... | <input checked="" type="radio"/> YES | <input type="radio"/> NO | |
| 5d. Does the COC note the type(s) of preservation for all bottles?..... | <input checked="" type="radio"/> YES | <input type="radio"/> NO | |
| 5e. Does the COC note the number of bottles submitted for each sample?..... | <input checked="" type="radio"/> YES | <input type="radio"/> NO | |
| 5f. Does the COC note the type of sample, composite or grab?..... | <input checked="" type="radio"/> YES | <input type="radio"/> NO | |
| 5g. Does the COC note the matrix of the sample(s)?..... | <input checked="" type="radio"/> YES | <input type="radio"/> NO | |
| 6. Are all aqueous samples requiring preservation preserved correctly?..... | <input checked="" type="radio"/> N/A | <input type="radio"/> YES | <input type="radio"/> NO |
| 7. Were all samples placed in the proper containers for the requested analyses, with sufficient volume?..... | <input checked="" type="radio"/> YES | <input type="radio"/> NO | |
| 8. Are all samples within holding times for the requested analyses?..... | <input checked="" type="radio"/> YES | <input type="radio"/> NO | |
| 9. Were all sample containers received intact and headspace free when required? (not broken, leaking, frozen, etc.)..... | <input checked="" type="radio"/> YES | <input type="radio"/> NO | |
| 10. Did we receive trip blanks (applies only for methods EPA 504, EPA 524.2 and 1631E (LL Hg)?..... | <input checked="" type="radio"/> N/A | <input type="radio"/> YES | <input type="radio"/> NO |
| 11. Were the samples received on ice?..... | <input checked="" type="radio"/> YES | <input type="radio"/> NO | |
| 12. Were sample temperatures measured at 0.0-6.0°C..... | <input checked="" type="radio"/> YES | <input type="radio"/> NO | |
| 13. Are the samples DW matrix ? IF YES, fill out Reportable Drinking Water questions below..... | | <input type="radio"/> YES | <input checked="" type="radio"/> NO |
| 13a. Are the samples required for SDWA compliance reporting?..... | <input type="radio"/> N/A | <input type="radio"/> YES | <input type="radio"/> NO |
| 13b. Did the client provide a SDWA PWS ID#?..... | <input type="radio"/> N/A | <input type="radio"/> YES | <input type="radio"/> NO |
| 13c. Are all aqueous unpreserved SDWA samples pH 5-9?..... | <input type="radio"/> N/A | <input type="radio"/> YES | <input type="radio"/> NO |
| 13d. Did the client provide the SDWA sample location ID/Description?..... | <input type="radio"/> N/A | <input type="radio"/> YES | <input type="radio"/> NO |
| 13e. Did the client provide the SDWA sample type (D, E, R, C, P, S)?..... | <input type="radio"/> N/A | <input type="radio"/> YES | <input type="radio"/> NO |

Cooler #: _____
 Temperature (°C): 4
 Thermometer ID: 402
 Radiological (µCi): _____

COMMENTS (Required for all NO responses above and any sample non-conformance):

Rev. 4/29/2019



Year 2019
 Quarter 3

			CELL 1		CELL 2			CELL 3		CELL 4		CELL 5		CELL 6	
Month	Week	Rain	FFMH01S	FFMH01SS	FFLFCEL2	FFLFCCELL2	FFMH02SS	FFMH03S	FFMH03SS	FFMH04S	FFMH04SS	FFMH05S	FFMH05SS	FFMH06S	FFMH06SS
		Total	S GPD (Avg.)	GPD/ACRE (Avg.)	AS GPD (Avg.)	BS GPD (Avg.)	GPD/ACRE (Avg.)	S GPD (Avg.)	GPD/ACRE (Avg.)	S GPD (Avg.)	GPD/ACRE (Avg.)	S GPD (Avg.)	GPD/ACRE (Avg.)	S GPD (Avg.)	GPD/ACRE (Avg.)
7															
	1	0.30	80.00	4.56	0.00	0.00	0.00	2.14	0.12	0.00	0.00	1.47	0.07	0.00	0.00
	2	1.63	80.00	4.56	0.00	0.00	0.00	2.90	0.16	0.00	0.00	3.53	0.16	7.90	0.68
	3	0.84	81.43	4.64	0.00	0.00	0.00	5.14	0.29	0.00	0.00	1.50	0.07	0.00	0.00
	4	0.71	68.57	3.91	0.00	0.00	0.00	1.46	0.08	0.00	0.00	4.31	0.20	8.26	0.71
	5	0.41	80.00	4.56	0.00	0.00	0.00	5.13	0.29	0.00	0.00	0.00	0.00	20.03	1.72
8															
	1	0.81	2.50	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.83	0.18	0.00	0.00
	2	0.73	35.71	2.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.89	0.68
	3	0.20	105.71	6.02	0.00	0.00	0.00	7.63	0.43	0.00	0.00	7.99	0.37	0.00	0.00
	4	0.27	120.00	6.84	0.00	0.00	0.00	6.67	0.38	0.00	0.00	2.17	0.10	8.33	0.71
	5	0.34	83.33	4.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.83	0.04	9.57	0.82
9															
	1	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.23	0.00	0.00	0.00	0.00	0.00	0.00
	2	0.84	1.43	0.08	0.00	0.00	0.00	1.81	0.10	0.00	0.00	2.14	0.10	7.61	0.65
	3	0.64	130.00	7.41	0.00	0.00	0.00	1.50	0.08	0.00	0.00	1.31	0.06	7.43	0.64
	4	0.00	104.29	5.94	0.00	0.00	0.00	3.81	0.22	0.00	0.00	0.66	0.03	0.00	0.00
	5	0.04	74.29	4.23	0.00	0.00	0.00	2.81	0.16	0.00	0.00	5.76	0.27	7.60	0.65
	6	0.00	90.00	5.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Quarterly Average		7.76	76.20	4.34	0.00	0.00	0.00	2.94	0.17	0.00	0.00	2.57	0.12	5.46	0.47



Date Prepared/Revised 10/23/2019
DEP USE ONLY
Date Received

**FORM 52
MUNICIPAL WASTE LANDFILL
PRIVATE WATER SUPPLY
QUARTERLY WATER QUALITY ANALYSES**

All information must be typed or legibly printed in the spaces provided. If additional space is necessary, identify each attached sheet as Form 52, reference the item number and identify the date prepared. The "date prepared/revised" on any attached sheets needs to match the "date prepared/revised" on this page.

General Reference: Act 101 Section 1103	
SECTION A. SITE IDENTIFIER	
Applicant/permittee:	Lancaster County Solid Waste Manage
Site Name:	Frey Farm Landfill
Facility ID (as issued by DEP):	101389
SECTION B. PRIVATE WATER SUPPLY INFORMATION	
INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (DE° MM' SS.S")	
Facility Name:	Frey Farm Landfill
County:	Lancaster County
Township or Municipality:	MANOR TOWNSHIP
Landowner Name:	LCSWMA
Address:	3044 RIVER ROAD
Phone No.:	
Sampling Point:	Latitude: 39° 57' 30.58" Longitude: 76° 26' 11.25"
Depth to Water Level:	ft. Measured from: <input checked="" type="checkbox"/> Land Surface <input type="checkbox"/> TOC
Casing Stick Up:	ft. Elevation of Water Level: ft./MSL
Total Well Depth:	ft.
Sampling Depth:	ft. Sampling Method: <input type="checkbox"/> Pumped <input type="checkbox"/> Bailed
Well Purged:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Well Volumes Purged:
Sample Field Filtered (must be 0.45 micron)?:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Sample Date:(mm/dd/yy)	08/23/2019 Sample Collection Time: 2:55 PM
Laboratory(ies) Performing Analysis	ALS Environmental
(include address and phone number)	34 Dogwood Lane Middletown, PA 17057 (717) 944-5541
Lab Accreditation Number(s)	22-293
Lab Analysis Date	09/04/2019
Were any holding times exceeded?:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If yes, please explain in comments field.
Comments:	

FORM 52
MUNICIPAL WASTE LANDFILL
PRIVATE WATER SUPPLY
QUARTERLY WATER QUALITY ANALYSES

Facility I.D. Number

101389

Monitoring Point I.D. No.

PS LCSWMA

Sample Date

08/23/2019

1. Inorganics (Enter all data in mg/l except as noted)

PARAMETER	VALUE	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.249	SM4500D
BICARBONATE ALKALINITY	6	SM20-2321
CALCIUM, TOTAL	13.2	EPA 200.7
CALCIUM, DISSOLVED	14.1	EPA 200.7
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.2
CHLORIDE	22.7	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	30 ND	EPA 200.7
IRON, DISSOLVED (ug/l)	60 ND	EPA 200.7
MAGNESIUM, TOTAL	10.1	EPA 200.7
MAGNESIUM, DISSOLVED	10.5	EPA 200.7
MANGANESE, TOTAL (ug/l)	29	EPA 200.7
MANGANESE, DISSOLVED (ug/l)	31	EPA 200.7
NITRATE-NITROGEN	19.4	EPA 300

T Please indicate detection limit if analyte is not detected.

FORM 52
MUNICIPAL WASTE LANDFILL
PRIVATE WATER SUPPLY
QUARTERLY WATER QUALITY ANALYSES

Facility I.D. Number

101389

Monitoring Point I.D. No.

PS LCSWMA

Sample Date

08/23/2019

1. Inorganics, continued (Enter all data in mg/l except as noted)

PARAMETER	VALUE	ANALYSIS METHOD NUMBER
NITRITE - NITROGEN	0.2 ND	EPA 300
pH-FIELD (SU)	6.15	FIELD
pH-LAB (SU)	6.2	SM4500B
POTASSIUM, TOTAL	1.6	EPA 200.7
POTASSIUM, DISSOLVED	1.6	EPA 200.7
SODIUM, TOTAL	8.2	EPA 200.7
SODIUM, DISSOLVED	8.5	EPA 200.7
SPEC. COND., FIELD (umhos/cm)	219	FIELD
SPEC. COND., LAB (umhos/cm)	213	EPA 120.1
SULFATE	2 ND	EPA 300
ALKALINITY	6	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	164	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	0.5 ND	SM20-5310B
TOTAL PHENOLICS (ug/l)	5 ND	EPA 420.4
TURBIDITY (NTU)	0.17	SM 2130B

T Please indicate detection limit if analyte is not detected.

FORM 52
MUNICIPAL WASTE LANDFILL
PRIVATE WATER SUPPLY
QUARTERLY WATER QUALITY ANALYSES

Facility I.D. Number

101389

Monitoring Point I.D. No.

PS LCSWMA

Sample Date

08/23/2019

2. Organics (Enter all data in ug/l)

PARAMETER	VALUE	ANALYSIS METHOD NUMBER
BENZENE	1 ND	EPA 524.2
1,2-DIBROMOETHANE	1 ND	EPA 524.2
1,1-DICHLOROETHANE	1 ND	EPA 524.2
1,1-DICHLOROETHENE	1 ND	EPA 524.2
1,2-DICHLOROETHANE	1 ND	EPA 524.2
CIS 1,2-DICHLOROETHENE	1 ND	EPA 524.2
TRANS 1,2-DICHLOROETHENE	1 ND	EPA 524.2
ETHYLBENZENE	1 ND	EPA 524.2
METHYLENE CHLORIDE	1 ND	EPA 524.2
TETRACHLOROETHENE	1 ND	EPA 524.2
TOLUENE	1 ND	EPA 524.2
1,1,1-TRICHLOROETHANE	1 ND	EPA 524.2
TRICHLOROETHENE	1 ND	EPA 524.2
TRICHLOROFLUOROMETHANE	1 ND	EPA 524.2
VINYL CHLORIDE	1 ND	EPA 524.2
XYLENES (TOTAL)	3 ND	EPA 524.2

T Please indicate detection limit if analyte is not detected.



Date Prepared/Revised 10/23/2019
DEP USE ONLY
Date Received

**FORM 52
MUNICIPAL WASTE LANDFILL
PRIVATE WATER SUPPLY
QUARTERLY WATER QUALITY ANALYSES**

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General Reference: Act 101 Section 1103	
SECTION A. SITE IDENTIFIER	
Applicant/permittee:	Lancaster County Solid Waste Manage
Site Name:	Frey Farm Landfill
Facility ID (as issued by DEP):	101389
SECTION B. PRIVATE WATER SUPPLY INFORMATION	
INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (DE° MM' SS.S")	
Facility Name:	Frey Farm Landfill
County:	Lancaster County
Township or Municipality:	MANOR TOWNSHIP
Landowner Name:	MILLER
Address:	3052 RIVER ROAD
Phone No.:	
Sampling Point:	Latitude: 39° 57' 29.85" Longitude: 76° 26' 11.45"
Depth to Water Level:	ft. Measured from: <input checked="" type="checkbox"/> Land Surface <input type="checkbox"/> TOC
Casing Stick Up:	ft. Elevation of Water Level: ft./MSL
Total Well Depth:	ft.
Sampling Depth:	ft. Sampling Method: <input type="checkbox"/> Pumped <input type="checkbox"/> Bailed
Well Purged:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Well Volumes Purged:
Sample Field Filtered (must be 0.45 micron)?:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Sample Date:(mm/dd/yy)	08/23/2019 Sample Collection Time: 2:46 PM
Laboratory(ies) Performing Analysis	ALS Environmental
(include address and phone number)	34 Dogwood Lane Middletown, PA 17057 (717) 944-5541
Lab Accreditation Number(s)	22-293
Lab Analysis Date	09/04/2019
Were any holding times exceeded?:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If yes, please explain in comments field.
Comments:	

FORM 52
MUNICIPAL WASTE LANDFILL
PRIVATE WATER SUPPLY
QUARTERLY WATER QUALITY ANALYSES

Facility I.D. Number

101389

Monitoring Point I.D. No.

PS MILLER

Sample Date

08/23/2019

1. Inorganics (Enter all data in mg/l except as noted)

PARAMETER	VALUE	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.19	SM4500D
BICARBONATE ALKALINITY	6	SM20-2321
CALCIUM, TOTAL	16.5	EPA 200.7
CALCIUM, DISSOLVED	16.8	EPA 200.7
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.2
CHLORIDE	22.3	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	30 ND	EPA 200.7
IRON, DISSOLVED (ug/l)	60 ND	EPA 200.7
MAGNESIUM, TOTAL	8.6	EPA 200.7
MAGNESIUM, DISSOLVED	8.8	EPA 200.7
MANGANESE, TOTAL (ug/l)	36	EPA 200.7
MANGANESE, DISSOLVED (ug/l)	39	EPA 200.7
NITRATE-NITROGEN	18.7	EPA 300

T Please indicate detection limit if analyte is not detected.

**FORM 52
MUNICIPAL WASTE LANDFILL
PRIVATE WATER SUPPLY
QUARTERLY WATER QUALITY ANALYSES**

Facility I.D. Number

101389

Monitoring Point I.D. No.

PS MILLER

Sample Date

08/23/2019

1. Inorganics, continued (Enter all data in mg/l except as noted)

PARAMETER	VALUE	ANALYSIS METHOD NUMBER
NITRITE - NITROGEN	0.2 ND	EPA 300
pH-FIELD (SU)	6.09	FIELD
pH-LAB (SU)	6.13	SM4500B
POTASSIUM, TOTAL	1.7	EPA 200.7
POTASSIUM, DISSOLVED	1.8	EPA 200.7
SODIUM, TOTAL	7.8	EPA 200.7
SODIUM, DISSOLVED	8	EPA 200.7
SPEC. COND., FIELD (umhos/cm)	216	FIELD
SPEC. COND., LAB (umhos/cm)	211	EPA 120.1
SULFATE	2.1	EPA 300
ALKALINITY	6	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	153	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	0.5 ND	SM20-5310B
TOTAL PHENOLICS (ug/l)	5 ND	EPA 420.4
TURBIDITY (NTU)	0.2	SM 2130B

T Please indicate detection limit if analyte is not detected.

FORM 52
MUNICIPAL WASTE LANDFILL
PRIVATE WATER SUPPLY
QUARTERLY WATER QUALITY ANALYSES

Facility I.D. Number

101389

Monitoring Point I.D. No.

PS MILLER

Sample Date

08/23/2019

2. Organics (Enter all data in ug/l)

PARAMETER	VALUE	ANALYSIS METHOD NUMBER
BENZENE	1 ND	EPA 524.2
1,2-DIBROMOETHANE	1 ND	EPA 524.2
1,1-DICHLOROETHANE	1 ND	EPA 524.2
1,1-DICHLOROETHENE	1 ND	EPA 524.2
1,2-DICHLOROETHANE	1 ND	EPA 524.2
CIS 1,2-DICHLOROETHENE	1 ND	EPA 524.2
TRANS 1,2-DICHLOROETHENE	1 ND	EPA 524.2
ETHYLBENZENE	1 ND	EPA 524.2
METHYLENE CHLORIDE	1 ND	EPA 524.2
TETRACHLOROETHENE	1 ND	EPA 524.2
TOLUENE	1 ND	EPA 524.2
1,1,1-TRICHLOROETHANE	1 ND	EPA 524.2
TRICHLOROETHENE	1 ND	EPA 524.2
TRICHLOROFLUOROMETHANE	1 ND	EPA 524.2
VINYL CHLORIDE	1 ND	EPA 524.2
XYLENES (TOTAL)	3 ND	EPA 524.2

T Please indicate detection limit if analyte is not detected.



Date Prepared/Revised 10/23/2019
DEP USE ONLY
Date Received

**FORM 52
MUNICIPAL WASTE LANDFILL
PRIVATE WATER SUPPLY
QUARTERLY WATER QUALITY ANALYSES**

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General Reference: Act 101 Section 1103	
SECTION A. SITE IDENTIFIER	
Applicant/permittee:	Lancaster County Solid Waste Manage
Site Name:	Frey Farm Landfill
Facility ID (as issued by DEP):	101389
SECTION B. PRIVATE WATER SUPPLY INFORMATION	
INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (DE° MM' SS.S")	
Facility Name:	Frey Farm Landfill
County:	Lancaster County
Township or Municipality:	MANOR TOWNSHIP
Landowner Name:	LCSWMA
Address:	3056 RIVER ROAD
Phone No.:	
Sampling Point:	Latitude: 39° 57' 28.44" Longitude: 76° 26' 10.43"
Depth to Water Level:	ft. Measured from: <input checked="" type="checkbox"/> Land Surface <input type="checkbox"/> TOC
Casing Stick Up:	ft. Elevation of Water Level: ft./MSL
Total Well Depth:	ft.
Sampling Depth:	ft. Sampling Method: <input type="checkbox"/> Pumped <input type="checkbox"/> Bailed
Well Purged:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Well Volumes Purged:
Sample Field Filtered (must be 0.45 micron)?:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Sample Date:(mm/dd/yy)	08/23/2019 Sample Collection Time: 2:39 PM
Laboratory(ies) Performing Analysis	ALS Environmental
(include address and phone number)	34 Dogwood Lane Middletown, PA 17057 (717) 944-5541
Lab Accreditation Number(s)	22-293
Lab Analysis Date	09/05/2019
Were any holding times exceeded?:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If yes, please explain in comments field.
Comments:	

FORM 52
MUNICIPAL WASTE LANDFILL
PRIVATE WATER SUPPLY
QUARTERLY WATER QUALITY ANALYSES

Facility I.D. Number

101389

Monitoring Point I.D. No.

PS LCSWMA

Sample Date

08/23/2019

1. Inorganics (Enter all data in mg/l except as noted)

PARAMETER	VALUE	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.179	SM4500D
BICARBONATE ALKALINITY	5 ND	SM20-2321
CALCIUM, TOTAL	10.2	EPA 200.7
CALCIUM, DISSOLVED	10.6	EPA 200.7
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.2
CHLORIDE	26.3	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	30 ND	EPA 200.7
IRON, DISSOLVED (ug/l)	60 ND	EPA 200.7
MAGNESIUM, TOTAL	13.5	EPA 200.7
MAGNESIUM, DISSOLVED	13.7	EPA 200.7
MANGANESE, TOTAL (ug/l)	130	EPA 200.7
MANGANESE, DISSOLVED (ug/l)	130	EPA 200.7
NITRATE-NITROGEN	20	EPA 300

T Please indicate detection limit if analyte is not detected.

FORM 52
MUNICIPAL WASTE LANDFILL
PRIVATE WATER SUPPLY
QUARTERLY WATER QUALITY ANALYSES

Facility I.D. Number

101389

Monitoring Point I.D. No.

PS LCSWMA

Sample Date

08/23/2019

1. Inorganics, continued (Enter all data in mg/l except as noted)

PARAMETER	VALUE	ANALYSIS METHOD NUMBER
NITRITE - NITROGEN	0.2 ND	EPA 300
pH-FIELD (SU)	5.22	FIELD
pH-LAB (SU)	5.18	SM4500B
POTASSIUM, TOTAL	2.1	EPA 200.7
POTASSIUM, DISSOLVED	2.1	EPA 200.7
SODIUM, TOTAL	8.4	EPA 200.7
SODIUM, DISSOLVED	8.7	EPA 200.7
SPEC. COND., FIELD (umhos/cm)	248	FIELD
SPEC. COND., LAB (umhos/cm)	237	EPA 120.1
SULFATE	2 ND	EPA 300
ALKALINITY	5 ND	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	186	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	0.5 ND	SM20-5310B
TOTAL PHENOLICS (ug/l)	5 ND	EPA 420.4
TURBIDITY (NTU)	0.17	SM 2130B

T Please indicate detection limit if analyte is not detected.

FORM 52
MUNICIPAL WASTE LANDFILL
PRIVATE WATER SUPPLY
QUARTERLY WATER QUALITY ANALYSES

Facility I.D. Number

101389

Monitoring Point I.D. No.

PS LCSWMA

Sample Date

08/23/2019

2. Organics (Enter all data in ug/l)

PARAMETER	VALUE	ANALYSIS METHOD NUMBER
BENZENE	1 ND	EPA 524.2
1,2-DIBROMOETHANE	1 ND	EPA 524.2
1,1-DICHLOROETHANE	1 ND	EPA 524.2
1,1-DICHLOROETHENE	1 ND	EPA 524.2
1,2-DICHLOROETHANE	1 ND	EPA 524.2
CIS 1,2-DICHLOROETHENE	1 ND	EPA 524.2
TRANS 1,2-DICHLOROETHENE	1 ND	EPA 524.2
ETHYLBENZENE	1 ND	EPA 524.2
METHYLENE CHLORIDE	1 ND	EPA 524.2
TETRACHLOROETHENE	1 ND	EPA 524.2
TOLUENE	1 ND	EPA 524.2
1,1,1-TRICHLOROETHANE	1 ND	EPA 524.2
TRICHLOROETHENE	1 ND	EPA 524.2
TRICHLOROFLUOROMETHANE	1 ND	EPA 524.2
VINYL CHLORIDE	1 ND	EPA 524.2
XYLENES (TOTAL)	3 ND	EPA 524.2

T Please indicate detection limit if analyte is not detected.



Date Prepared/Revised 10/23/2019
DEP USE ONLY
Date Received

**FORM 52
MUNICIPAL WASTE LANDFILL
PRIVATE WATER SUPPLY
QUARTERLY WATER QUALITY ANALYSES**

All information must be typed or legibly printed in the spaces provided. If additional space is necessary, identify each attached sheet as Form 52, reference the item number and identify the date prepared. The "date prepared/revised" on any attached sheets needs to match the "date prepared/revised" on this page.

General Reference: Act 101 Section 1103	
SECTION A. SITE IDENTIFIER	
Applicant/permittee:	Lancaster County Solid Waste Manage
Site Name:	Frey Farm Landfill
Facility ID (as issued by DEP):	101389
SECTION B. PRIVATE WATER SUPPLY INFORMATION	
INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (DE° MM' SS.S")	
Facility Name:	Frey Farm Landfill
County:	Lancaster County
Township or Municipality:	MANOR TOWNSHIP
Landowner Name:	LCSWMA
Address:	3060 RIVER ROAD
Phone No.:	
Sampling Point:	Latitude: 39° 57' 27.63" Longitude: 76° 26' 10.01"
Depth to Water Level:	ft. Measured from: <input checked="" type="checkbox"/> Land Surface <input type="checkbox"/> TOC
Casing Stick Up:	ft. Elevation of Water Level: ft./MSL
Total Well Depth:	ft.
Sampling Depth:	ft. Sampling Method: <input type="checkbox"/> Pumped <input type="checkbox"/> Bailed
Well Purged:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Well Volumes Purged:
Sample Field Filtered (must be 0.45 micron)?:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Sample Date:(mm/dd/yy)	08/28/2019 Sample Collection Time: 4:37 PM
Laboratory(ies) Performing Analysis	ALS Environmental
(include address and phone number)	34 Dogwood Lane Middletown, PA 17057 (717) 944-5541
Lab Accreditation Number(s)	22-293
Lab Analysis Date	09/06/2019
Were any holding times exceeded?:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If yes, please explain in comments field.
Comments:	

FORM 52
MUNICIPAL WASTE LANDFILL
PRIVATE WATER SUPPLY
QUARTERLY WATER QUALITY ANALYSES

Facility I.D. Number

101389

Monitoring Point I.D. No.

PS LCSWMA

Sample Date

08/28/2019

1. Inorganics (Enter all data in mg/l except as noted)

PARAMETER	VALUE	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	SM4500D
BICARBONATE ALKALINITY	5 ND	SM20-2321
CALCIUM, TOTAL	8.9	EPA 200.7
CALCIUM, DISSOLVED	8.6	EPA 200.7
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.2
CHLORIDE	20.3	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	32	EPA 200.7
IRON, DISSOLVED (ug/l)	60 ND	EPA 200.7
MAGNESIUM, TOTAL	10.5	EPA 200.7
MAGNESIUM, DISSOLVED	10.3	EPA 200.7
MANGANESE, TOTAL (ug/l)	110	EPA 200.7
MANGANESE, DISSOLVED (ug/l)	100	EPA 200.7
NITRATE-NITROGEN	14.5	EPA 300

T Please indicate detection limit if analyte is not detected.

FORM 52
MUNICIPAL WASTE LANDFILL
PRIVATE WATER SUPPLY
QUARTERLY WATER QUALITY ANALYSES

Facility I.D. Number

101389

Monitoring Point I.D. No.

PS LCSWMA

Sample Date

08/28/2019

1. Inorganics, continued (Enter all data in mg/l except as noted)

PARAMETER	VALUE	ANALYSIS METHOD NUMBER
NITRITE - NITROGEN	0.2 ND	EPA 300
pH-FIELD (SU)	5.27	FIELD
pH-LAB (SU)	5.39	SM4500B
POTASSIUM, TOTAL	2	EPA 200.7
POTASSIUM, DISSOLVED	1.9	EPA 200.7
SODIUM, TOTAL	9	EPA 200.7
SODIUM, DISSOLVED	8.1	EPA 200.7
SPEC. COND., FIELD (umhos/cm)	178	FIELD
SPEC. COND., LAB (umhos/cm)	187	EPA 120.1
SULFATE	9.3	EPA 300
ALKALINITY	5 ND	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	152	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	0.5 ND	SM20-5310B
TOTAL PHENOLICS (ug/l)	5 ND	EPA 420.4
TURBIDITY (NTU)	0.57	SM 2130B

T Please indicate detection limit if analyte is not detected.

FORM 52
MUNICIPAL WASTE LANDFILL
PRIVATE WATER SUPPLY
QUARTERLY WATER QUALITY ANALYSES

Facility I.D. Number

101389

Monitoring Point I.D. No.

PS LCSWMA

Sample Date

08/28/2019

2. Organics (Enter all data in ug/l)

PARAMETER	VALUE	ANALYSIS METHOD NUMBER
BENZENE	1 ND	EPA 524.2
1,2-DIBROMOETHANE	1 ND	EPA 524.2
1,1-DICHLOROETHANE	1 ND	EPA 524.2
1,1-DICHLOROETHENE	1 ND	EPA 524.2
1,2-DICHLOROETHANE	1 ND	EPA 524.2
CIS 1,2-DICHLOROETHENE	1 ND	EPA 524.2
TRANS 1,2-DICHLOROETHENE	1 ND	EPA 524.2
ETHYLBENZENE	1 ND	EPA 524.2
METHYLENE CHLORIDE	1 ND	EPA 524.2
TETRACHLOROETHENE	1 ND	EPA 524.2
TOLUENE	1 ND	EPA 524.2
1,1,1-TRICHLOROETHANE	1 ND	EPA 524.2
TRICHLOROETHENE	1 ND	EPA 524.2
TRICHLOROFLUOROMETHANE	1 ND	EPA 524.2
VINYL CHLORIDE	1 ND	EPA 524.2
XYLENES (TOTAL)	3 ND	EPA 524.2

T Please indicate detection limit if analyte is not detected.



Date Prepared/Revised 10/23/2019
DEP USE ONLY
Date Received

**FORM 52
MUNICIPAL WASTE LANDFILL
PRIVATE WATER SUPPLY
QUARTERLY WATER QUALITY ANALYSES**

All information must be typed or legibly printed in the spaces provided. If additional space is necessary, identify each attached sheet as Form 52, reference the item number and identify the date prepared. The "date prepared/revised" on any attached sheets needs to match the "date prepared/revised" on this page.

General Reference: Act 101 Section 1103	
SECTION A. SITE IDENTIFIER	
Applicant/permittee:	Lancaster County Solid Waste Manage
Site Name:	Frey Farm Landfill
Facility ID (as issued by DEP):	101389
SECTION B. PRIVATE WATER SUPPLY INFORMATION	
INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (DE° MM' SS.S")	
Facility Name:	Frey Farm Landfill
County:	Lancaster County
Township or Municipality:	MANOR TOWNSHIP
Landowner Name:	SENSENICH
Address:	3076 RIVER ROAD
Phone No.:	
Sampling Point:	Latitude: 39° 57' 28.2" Longitude: 76° 26' 11.1"
Depth to Water Level:	ft. Measured from: <input checked="" type="checkbox"/> Land Surface <input type="checkbox"/> TOC
Casing Stick Up:	ft. Elevation of Water Level: _____ ft./MSL
Total Well Depth:	ft.
Sampling Depth:	ft. Sampling Method: <input type="checkbox"/> Pumped <input type="checkbox"/> Bailed
Well Purged:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Well Volumes Purged: _____
Sample Field Filtered (must be 0.45 micron)?:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Sample Date:(mm/dd/yy)	08/23/2019 Sample Collection Time: 2:25 PM
Laboratory(ies) Performing Analysis	ALS Environmental
(include address and phone number)	34 Dogwood Lane Middletown, PA 17057 (717) 944-5541
Lab Accreditation Number(s)	22-293
Lab Analysis Date	09/05/2019
Were any holding times exceeded?:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If yes, please explain in comments field.
Comments:	

FORM 52
MUNICIPAL WASTE LANDFILL
PRIVATE WATER SUPPLY
QUARTERLY WATER QUALITY ANALYSES

Facility I.D. Number

101389

Monitoring Point I.D. No.

PS SENSENICH

Sample Date

08/23/2019

1. Inorganics (Enter all data in mg/l except as noted)

PARAMETER	VALUE	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.185	SM4500D
BICARBONATE ALKALINITY	7	SM20-2321
CALCIUM, TOTAL	15.7	EPA 200.7
CALCIUM, DISSOLVED	16.7	EPA 200.7
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.2
CHLORIDE	57.1	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	33	EPA 200.7
IRON, DISSOLVED (ug/l)	60 ND	EPA 200.7
MAGNESIUM, TOTAL	8.2	EPA 200.7
MAGNESIUM, DISSOLVED	8.6	EPA 200.7
MANGANESE, TOTAL (ug/l)	190	EPA 200.7
MANGANESE, DISSOLVED (ug/l)	200	EPA 200.7
NITRATE-NITROGEN	10.4	EPA 300

T Please indicate detection limit if analyte is not detected.

FORM 52
MUNICIPAL WASTE LANDFILL
PRIVATE WATER SUPPLY
QUARTERLY WATER QUALITY ANALYSES

Facility I.D. Number

101389

Monitoring Point I.D. No.

PS SENSENICH

Sample Date

08/23/2019

1. Inorganics, continued (Enter all data in mg/l except as noted)

PARAMETER	VALUE	ANALYSIS METHOD NUMBER
NITRITE - NITROGEN	0.2 ND	EPA 300
pH-FIELD (SU)	6.11	FIELD
pH-LAB (SU)	6.16	SM4500B
POTASSIUM, TOTAL	3.4	EPA 200.7
POTASSIUM, DISSOLVED	3.5	EPA 200.7
SODIUM, TOTAL	24.6	EPA 200.7
SODIUM, DISSOLVED	25.9	EPA 200.7
SPEC. COND., FIELD (umhos/cm)	288	FIELD
SPEC. COND., LAB (umhos/cm)	291	EPA 120.1
SULFATE	12.7	EPA 300
ALKALINITY	7	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	188	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	0.75	SM20-5310B
TOTAL PHENOLICS (ug/l)	5 ND	EPA 420.4
TURBIDITY (NTU)	0.21	SM 2130B

T Please indicate detection limit if analyte is not detected.

FORM 52
MUNICIPAL WASTE LANDFILL
PRIVATE WATER SUPPLY
QUARTERLY WATER QUALITY ANALYSES

Facility I.D. Number

101389

Monitoring Point I.D. No.

PS SENSENICH

Sample Date

08/23/2019

2. Organics (Enter all data in ug/l)

PARAMETER	VALUE	ANALYSIS METHOD NUMBER
BENZENE	1 ND	EPA 524.2
1,2-DIBROMOETHANE	1 ND	EPA 524.2
1,1-DICHLOROETHANE	1 ND	EPA 524.2
1,1-DICHLOROETHENE	1 ND	EPA 524.2
1,2-DICHLOROETHANE	1 ND	EPA 524.2
CIS 1,2-DICHLOROETHENE	1 ND	EPA 524.2
TRANS 1,2-DICHLOROETHENE	1 ND	EPA 524.2
ETHYLBENZENE	1 ND	EPA 524.2
METHYLENE CHLORIDE	1 ND	EPA 524.2
TETRACHLOROETHENE	1 ND	EPA 524.2
TOLUENE	1 ND	EPA 524.2
1,1,1-TRICHLOROETHANE	1 ND	EPA 524.2
TRICHLOROETHENE	1 ND	EPA 524.2
TRICHLOROFLUOROMETHANE	1 ND	EPA 524.2
VINYL CHLORIDE	1 ND	EPA 524.2
XYLENES (TOTAL)	3 ND	EPA 524.2

T Please indicate detection limit if analyte is not detected.



Date Prepared/Revised 10/23/2019
DEP USE ONLY
Date Received

**FORM 52
MUNICIPAL WASTE LANDFILL
PRIVATE WATER SUPPLY
QUARTERLY WATER QUALITY ANALYSES**

All information must be typed or legibly printed in the spaces provided. If additional space is necessary, identify each attached sheet as Form 52, reference the item number and identify the date prepared. The "date prepared/revised" on any attached sheets needs to match the "date prepared/revised" on this page.

General Reference: Act 101 Section 1103	
SECTION A. SITE IDENTIFIER	
Applicant/permittee:	Lancaster County Solid Waste Manage
Site Name:	Frey Farm Landfill
Facility ID (as issued by DEP):	101389
SECTION B. PRIVATE WATER SUPPLY INFORMATION	
INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (DE° MM' SS.S")	
Facility Name:	Frey Farm Landfill
County:	Lancaster County
Township or Municipality:	MANOR TOWNSHIP
Landowner Name:	LCSWMA
Address:	3079 RIVER ROAD
Phone No.:	
Sampling Point:	Latitude: 39° 57' 21.99" Longitude: 76° 26' 10.58"
Depth to Water Level:	ft. Measured from: <input checked="" type="checkbox"/> Land Surface <input type="checkbox"/> TOC
Casing Stick Up:	ft. Elevation of Water Level: ft./MSL
Total Well Depth:	ft.
Sampling Depth:	ft. Sampling Method: <input type="checkbox"/> Pumped <input type="checkbox"/> Bailed
Well Purged:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Well Volumes Purged:
Sample Field Filtered (must be 0.45 micron)?:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Sample Date:(mm/dd/yy)	08/23/2019 Sample Collection Time: 4:02 PM
Laboratory(ies) Performing Analysis	ALS Environmental
(include address and phone number)	34 Dogwood Lane Middletown, PA 17057 (717) 944-5541
Lab Accreditation Number(s)	22-293
Lab Analysis Date	09/04/2019
Were any holding times exceeded?:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If yes, please explain in comments field.
Comments:	

FORM 52
MUNICIPAL WASTE LANDFILL
PRIVATE WATER SUPPLY
QUARTERLY WATER QUALITY ANALYSES

Facility I.D. Number

101389

Monitoring Point I.D. No.

PS LCSWMA

Sample Date

08/23/2019

1. Inorganics (Enter all data in mg/l except as noted)

PARAMETER	VALUE	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.251	SM4500D
BICARBONATE ALKALINITY	23	SM20-2321
CALCIUM, TOTAL	10	EPA 200.7
CALCIUM, DISSOLVED	9.9	EPA 200.7
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.2
CHLORIDE	35.9	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	30 ND	EPA 200.7
IRON, DISSOLVED (ug/l)	60 ND	EPA 200.7
MAGNESIUM, TOTAL	5.4	EPA 200.7
MAGNESIUM, DISSOLVED	5.5	EPA 200.7
MANGANESE, TOTAL (ug/l)	410	EPA 200.7
MANGANESE, DISSOLVED (ug/l)	410	EPA 200.7
NITRATE-NITROGEN	0.2 ND	EPA 300

T Please indicate detection limit if analyte is not detected.

FORM 52
MUNICIPAL WASTE LANDFILL
PRIVATE WATER SUPPLY
QUARTERLY WATER QUALITY ANALYSES

Facility I.D. Number

101389

Monitoring Point I.D. No.

PS LCSWMA

Sample Date

08/23/2019

1. Inorganics, continued (Enter all data in mg/l except as noted)

PARAMETER	VALUE	ANALYSIS METHOD NUMBER
NITRITE - NITROGEN	0.2 ND	EPA 300
pH-FIELD (SU)	6.62	FIELD
pH-LAB (SU)	6.67	SM4500B
POTASSIUM, TOTAL	2	EPA 200.7
POTASSIUM, DISSOLVED	2.1	EPA 200.7
SODIUM, TOTAL	14.3	EPA 200.7
SODIUM, DISSOLVED	14.5	EPA 200.7
SPEC. COND., FIELD (umhos/cm)	193	FIELD
SPEC. COND., LAB (umhos/cm)	181	EPA 120.1
SULFATE	15.4	EPA 300
ALKALINITY	23	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	111	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	0.5 ND	SM20-5310B
TOTAL PHENOLICS (ug/l)	5 ND	EPA 420.4
TURBIDITY (NTU)	0.18	SM 2130B

T Please indicate detection limit if analyte is not detected.

FORM 52
MUNICIPAL WASTE LANDFILL
PRIVATE WATER SUPPLY
QUARTERLY WATER QUALITY ANALYSES

Facility I.D. Number

101389

Monitoring Point I.D. No.

PS LCSWMA

Sample Date

08/23/2019

2. Organics (Enter all data in ug/l)

PARAMETER	VALUE	ANALYSIS METHOD NUMBER
BENZENE	1 ND	EPA 524.2
1,2-DIBROMOETHANE	1 ND	EPA 524.2
1,1-DICHLOROETHANE	1 ND	EPA 524.2
1,1-DICHLOROETHENE	1 ND	EPA 524.2
1,2-DICHLOROETHANE	1 ND	EPA 524.2
CIS 1,2-DICHLOROETHENE	1 ND	EPA 524.2
TRANS 1,2-DICHLOROETHENE	1 ND	EPA 524.2
ETHYLBENZENE	1 ND	EPA 524.2
METHYLENE CHLORIDE	1 ND	EPA 524.2
TETRACHLOROETHENE	1 ND	EPA 524.2
TOLUENE	1 ND	EPA 524.2
1,1,1-TRICHLOROETHANE	1 ND	EPA 524.2
TRICHLOROETHENE	1 ND	EPA 524.2
TRICHLOROFLUOROMETHANE	1 ND	EPA 524.2
VINYL CHLORIDE	1 ND	EPA 524.2
XYLENES (TOTAL)	3 ND	EPA 524.2

T Please indicate detection limit if analyte is not detected.



Date Prepared/Revised 10/23/2019
DEP USE ONLY
Date Received

**FORM 52
MUNICIPAL WASTE LANDFILL
PRIVATE WATER SUPPLY
QUARTERLY WATER QUALITY ANALYSES**

All information must be typed or legibly printed in the spaces provided. If additional space is necessary, identify each attached sheet as Form 52, reference the item number and identify the date prepared. The "date prepared/revised" on any attached sheets needs to match the "date prepared/revised" on this page.

General Reference: Act 101 Section 1103	
SECTION A. SITE IDENTIFIER	
Applicant/permittee:	Lancaster County Solid Waste Manage
Site Name:	Frey Farm Landfill
Facility ID (as issued by DEP):	101389
SECTION B. PRIVATE WATER SUPPLY INFORMATION	
INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (DE° MM' SS.S")	
Facility Name:	Frey Farm Landfill
County:	Lancaster County
Township or Municipality:	MANOR TOWNSHIP
Landowner Name:	WEBER
Address:	3088 RIVER ROAD
Phone No.:	
Sampling Point:	Latitude: 39° 57' 21" Longitude: 76° 26' 7.1"
Depth to Water Level:	ft. Measured from: <input checked="" type="checkbox"/> Land Surface <input type="checkbox"/> TOC
Casing Stick Up:	ft. Elevation of Water Level: _____ ft./MSL
Total Well Depth:	ft.
Sampling Depth:	ft. Sampling Method: <input type="checkbox"/> Pumped <input type="checkbox"/> Bailed
Well Purged:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Well Volumes Purged: _____
Sample Field Filtered (must be 0.45 micron)?:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Sample Date:(mm/dd/yy)	08/23/2019 Sample Collection Time: 2:15 PM
Laboratory(ies) Performing Analysis	ALS Environmental
(include address and phone number)	34 Dogwood Lane Middletown, PA 17057 (717) 944-5541
Lab Accreditation Number(s)	22-293
Lab Analysis Date	09/04/2019
Were any holding times exceeded?:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If yes, please explain in comments field.
Comments:	

FORM 52
MUNICIPAL WASTE LANDFILL
PRIVATE WATER SUPPLY
QUARTERLY WATER QUALITY ANALYSES

Facility I.D. Number

101389

Monitoring Point I.D. No.

PS WEBER

Sample Date

08/23/2019

1. Inorganics (Enter all data in mg/l except as noted)

PARAMETER	VALUE	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.229	SM4500D
BICARBONATE ALKALINITY	150	SM20-2321
CALCIUM, TOTAL	0.1	EPA 200.7
CALCIUM, DISSOLVED	0.1 ND	EPA 200.7
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.2
CHLORIDE	235	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	30 ND	EPA 200.7
IRON, DISSOLVED (ug/l)	60 ND	EPA 200.7
MAGNESIUM, TOTAL	0.05 ND	EPA 200.7
MAGNESIUM, DISSOLVED	0.1 ND	EPA 200.7
MANGANESE, TOTAL (ug/l)	2.5 ND	EPA 200.7
MANGANESE, DISSOLVED (ug/l)	5 ND	EPA 200.7
NITRATE-NITROGEN	6.6	EPA 300

T Please indicate detection limit if analyte is not detected.

FORM 52
MUNICIPAL WASTE LANDFILL
PRIVATE WATER SUPPLY
QUARTERLY WATER QUALITY ANALYSES

Facility I.D. Number

101389

Monitoring Point I.D. No.

PS WEBER

Sample Date

08/23/2019

1. Inorganics, continued (Enter all data in mg/l except as noted)

PARAMETER	VALUE	ANALYSIS METHOD NUMBER
NITRITE - NITROGEN	0.2 ND	EPA 300
pH-FIELD (SU)	7.19	FIELD
pH-LAB (SU)	7.24	SM4500B
POTASSIUM, TOTAL	2	EPA 200.7
POTASSIUM, DISSOLVED	1.9	EPA 200.7
SODIUM, TOTAL	198	EPA 200.7
SODIUM, DISSOLVED	216	EPA 200.7
SPEC. COND., FIELD (umhos/cm)	1082	FIELD
SPEC. COND., LAB (umhos/cm)	1090	EPA 120.1
SULFATE	2 ND	EPA 300
ALKALINITY	150	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	602	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	0.5 ND	SM20-5310B
TOTAL PHENOLICS (ug/l)	5 ND	EPA 420.4
TURBIDITY (NTU)	0.12	SM 2130B

T Please indicate detection limit if analyte is not detected.

FORM 52
MUNICIPAL WASTE LANDFILL
PRIVATE WATER SUPPLY
QUARTERLY WATER QUALITY ANALYSES

Facility I.D. Number

101389

Monitoring Point I.D. No.

PS WEBER

Sample Date

08/23/2019

2. Organics (Enter all data in ug/l)

PARAMETER	VALUE	ANALYSIS METHOD NUMBER
BENZENE	1 ND	EPA 524.2
1,2-DIBROMOETHANE	1 ND	EPA 524.2
1,1-DICHLOROETHANE	1 ND	EPA 524.2
1,1-DICHLOROETHENE	1 ND	EPA 524.2
1,2-DICHLOROETHANE	1 ND	EPA 524.2
CIS 1,2-DICHLOROETHENE	1 ND	EPA 524.2
TRANS 1,2-DICHLOROETHENE	1 ND	EPA 524.2
ETHYLBENZENE	1 ND	EPA 524.2
METHYLENE CHLORIDE	1 ND	EPA 524.2
TETRACHLOROETHENE	1 ND	EPA 524.2
TOLUENE	1 ND	EPA 524.2
1,1,1-TRICHLOROETHANE	1 ND	EPA 524.2
TRICHLOROETHENE	1 ND	EPA 524.2
TRICHLOROFLUOROMETHANE	1 ND	EPA 524.2
VINYL CHLORIDE	1 ND	EPA 524.2
XYLENES (TOTAL)	3 ND	EPA 524.2

T Please indicate detection limit if analyte is not detected.



Date Prepared/Revised 10/23/2019
DEP USE ONLY
Date Received

**FORM 52
MUNICIPAL WASTE LANDFILL
PRIVATE WATER SUPPLY
QUARTERLY WATER QUALITY ANALYSES**

All information must be typed or legibly printed in the spaces provided. If additional space is necessary, identify each attached sheet as Form 52, reference the item number and identify the date prepared. The "date prepared/revised" on any attached sheets needs to match the "date prepared/revised" on this page.

General Reference: Act 101 Section 1103	
SECTION A. SITE IDENTIFIER	
Applicant/permittee:	Lancaster County Solid Waste Manage
Site Name:	Frey Farm Landfill
Facility ID (as issued by DEP):	101389
SECTION B. PRIVATE WATER SUPPLY INFORMATION	
INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (DE° MM' SS.S")	
Facility Name:	Frey Farm Landfill
County:	Lancaster County
Township or Municipality:	MANOR TOWNSHIP
Landowner Name:	KIRCHNER
Address:	3100 RIVER ROAD
Phone No.:	
Sampling Point: Latitude:	39° 57' 17.9" Longitude: 76° 26' 6.28"
Depth to Water Level:	ft. Measured from: <input checked="" type="checkbox"/> Land Surface <input type="checkbox"/> TOC
Casing Stick Up:	ft. Elevation of Water Level: _____ ft./MSL
Total Well Depth:	ft.
Sampling Depth:	ft. Sampling Method: <input type="checkbox"/> Pumped <input type="checkbox"/> Bailed
Well Purged:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Well Volumes Purged: _____
Sample Field Filtered (must be 0.45 micron)?:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Sample Date:(mm/dd/yy)	08/23/2019 Sample Collection Time: 2:02 PM
Laboratory(ies) Performing Analysis	ALS Environmental
(include address and phone number)	34 Dogwood Lane Middletown, PA 17057 (717) 944-5541
Lab Accreditation Number(s)	22-293
Lab Analysis Date	09/05/2019
Were any holding times exceeded?:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If yes, please explain in comments field.
Comments:	

FORM 52
MUNICIPAL WASTE LANDFILL
PRIVATE WATER SUPPLY
QUARTERLY WATER QUALITY ANALYSES

Facility I.D. Number

101389

Monitoring Point I.D. No.

PS KIRCHNER

Sample Date

08/23/2019

1. Inorganics (Enter all data in mg/l except as noted)

PARAMETER	VALUE	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.293	SM4500D
BICARBONATE ALKALINITY	7	SM20-2321
CALCIUM, TOTAL	12.5	EPA 200.7
CALCIUM, DISSOLVED	13	EPA 200.7
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.2
CHLORIDE	42.7	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	30 ND	EPA 200.7
IRON, DISSOLVED (ug/l)	60 ND	EPA 200.7
MAGNESIUM, TOTAL	6.1	EPA 200.7
MAGNESIUM, DISSOLVED	6.2	EPA 200.7
MANGANESE, TOTAL (ug/l)	12	EPA 200.7
MANGANESE, DISSOLVED (ug/l)	12	EPA 200.7
NITRATE-NITROGEN	4.9	EPA 300

T Please indicate detection limit if analyte is not detected.

FORM 52
MUNICIPAL WASTE LANDFILL
PRIVATE WATER SUPPLY
QUARTERLY WATER QUALITY ANALYSES

Facility I.D. Number

101389

Monitoring Point I.D. No.

PS KIRCHNER

Sample Date

08/23/2019

1. Inorganics, continued (Enter all data in mg/l except as noted)

PARAMETER	VALUE	ANALYSIS METHOD NUMBER
NITRITE - NITROGEN	0.2 ND	EPA 300
pH-FIELD (SU)	6.09	FIELD
pH-LAB (SU)	6.18	SM4500B
POTASSIUM, TOTAL	1.5	EPA 200.7
POTASSIUM, DISSOLVED	1.5	EPA 200.7
SODIUM, TOTAL	17.1	EPA 200.7
SODIUM, DISSOLVED	18.4	EPA 200.7
SPEC. COND., FIELD (umhos/cm)	200	FIELD
SPEC. COND., LAB (umhos/cm)	212	EPA 120.1
SULFATE	14.5	EPA 300
ALKALINITY	7	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	133	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	0.5 ND	SM20-5310B
TOTAL PHENOLICS (ug/l)	5 ND	EPA 420.4
TURBIDITY (NTU)	0.11	SM 2130B

T Please indicate detection limit if analyte is not detected.

FORM 52
MUNICIPAL WASTE LANDFILL
PRIVATE WATER SUPPLY
QUARTERLY WATER QUALITY ANALYSES

Facility I.D. Number

101389

Monitoring Point I.D. No.

PS KIRCHNER

Sample Date

08/23/2019

2. Organics (Enter all data in ug/l)

PARAMETER	VALUE	ANALYSIS METHOD NUMBER
BENZENE	1 ND	EPA 524.2
1,2-DIBROMOETHANE	1 ND	EPA 524.2
1,1-DICHLOROETHANE	1 ND	EPA 524.2
1,1-DICHLOROETHENE	1 ND	EPA 524.2
1,2-DICHLOROETHANE	1 ND	EPA 524.2
CIS 1,2-DICHLOROETHENE	1 ND	EPA 524.2
TRANS 1,2-DICHLOROETHENE	1 ND	EPA 524.2
ETHYLBENZENE	1 ND	EPA 524.2
METHYLENE CHLORIDE	1 ND	EPA 524.2
TETRACHLOROETHENE	1 ND	EPA 524.2
TOLUENE	1 ND	EPA 524.2
1,1,1-TRICHLOROETHANE	1 ND	EPA 524.2
TRICHLOROETHENE	1 ND	EPA 524.2
TRICHLOROFLUOROMETHANE	1 ND	EPA 524.2
VINYL CHLORIDE	1 ND	EPA 524.2
XYLENES (TOTAL)	3 ND	EPA 524.2

T Please indicate detection limit if analyte is not detected.



Date Prepared/Revised 10/23/2019
DEP USE ONLY
Date Received

**FORM 52
MUNICIPAL WASTE LANDFILL
PRIVATE WATER SUPPLY
QUARTERLY WATER QUALITY ANALYSES**

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General Reference: Act 101 Section 1103	
SECTION A. SITE IDENTIFIER	
Applicant/permittee:	Lancaster County Solid Waste Manage
Site Name:	Frey Farm Landfill
Facility ID (as issued by DEP):	101389
SECTION B. PRIVATE WATER SUPPLY INFORMATION	
INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (DE° MM' SS.S")	
Facility Name:	Frey Farm Landfill
County:	Lancaster County
Township or Municipality:	MANOR TOWNSHIP
Landowner Name:	FRY
Address:	3106 RIVER ROAD
Phone No.:	
Sampling Point:	Latitude: 39° 57' 17.27" Longitude: 76° 26' 5.6"
Depth to Water Level:	ft. Measured from: <input checked="" type="checkbox"/> Land Surface <input type="checkbox"/> TOC
Casing Stick Up:	ft. Elevation of Water Level: ft./MSL
Total Well Depth:	ft.
Sampling Depth:	ft. Sampling Method: <input type="checkbox"/> Pumped <input type="checkbox"/> Bailed
Well Purged:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Well Volumes Purged:
Sample Field Filtered (must be 0.45 micron)?:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Sample Date:(mm/dd/yy)	08/23/2019 Sample Collection Time: 1:54 PM
Laboratory(ies) Performing Analysis	ALS Environmental
(include address and phone number)	34 Dogwood Lane Middletown, PA 17057 (717) 944-5541
Lab Accreditation Number(s)	22-293
Lab Analysis Date	08/31/2019
Were any holding times exceeded?:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If yes, please explain in comments field.
Comments:	

FORM 52
MUNICIPAL WASTE LANDFILL
PRIVATE WATER SUPPLY
QUARTERLY WATER QUALITY ANALYSES

Facility I.D. Number

101389

Monitoring Point I.D. No.

PS FRY

Sample Date

08/23/2019

1. Inorganics (Enter all data in mg/l except as noted)

PARAMETER	VALUE	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	SM4500D
BICARBONATE ALKALINITY	11	SM20-2321
CALCIUM, TOTAL	21.3	EPA 200.7
CALCIUM, DISSOLVED	22.9	EPA 200.7
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.2
CHLORIDE	137	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	140	EPA 200.7
IRON, DISSOLVED (ug/l)	60 ND	EPA 200.7
MAGNESIUM, TOTAL	14.7	EPA 200.7
MAGNESIUM, DISSOLVED	15.9	EPA 200.7
MANGANESE, TOTAL (ug/l)	92	EPA 200.7
MANGANESE, DISSOLVED (ug/l)	90	EPA 200.7
NITRATE-NITROGEN	13.2	EPA 300

T Please indicate detection limit if analyte is not detected.

FORM 52
MUNICIPAL WASTE LANDFILL
PRIVATE WATER SUPPLY
QUARTERLY WATER QUALITY ANALYSES

Facility I.D. Number

101389

Monitoring Point I.D. No.

PS FRY

Sample Date

08/23/2019

1. Inorganics, continued (Enter all data in mg/l except as noted)

PARAMETER	VALUE	ANALYSIS METHOD NUMBER
NITRITE - NITROGEN	0.2 ND	EPA 300
pH-FIELD (SU)	6.02	FIELD
pH-LAB (SU)	5.96	SM4500B
POTASSIUM, TOTAL	2	EPA 200.7
POTASSIUM, DISSOLVED	2	EPA 200.7
SODIUM, TOTAL	54.5	EPA 200.7
SODIUM, DISSOLVED	56.5	EPA 200.7
SPEC. COND., FIELD (umhos/cm)	552	FIELD
SPEC. COND., LAB (umhos/cm)	546	EPA 120.1
SULFATE	8.5	EPA 300
ALKALINITY	11	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	347	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	0.68	SM20-5310B
TOTAL PHENOLICS (ug/l)	5 ND	EPA 420.4
TURBIDITY (NTU)	0.18	SM 2130B

T Please indicate detection limit if analyte is not detected.

FORM 52
MUNICIPAL WASTE LANDFILL
PRIVATE WATER SUPPLY
QUARTERLY WATER QUALITY ANALYSES

Facility I.D. Number

101389

Monitoring Point I.D. No.

PS FRY

Sample Date

08/23/2019

2. Organics (Enter all data in ug/l)

PARAMETER	VALUE	ANALYSIS METHOD NUMBER
BENZENE	1 ND	EPA 524.2
1,2-DIBROMOETHANE	1 ND	EPA 524.2
1,1-DICHLOROETHANE	1 ND	EPA 524.2
1,1-DICHLOROETHENE	1 ND	EPA 524.2
1,2-DICHLOROETHANE	1 ND	EPA 524.2
CIS 1,2-DICHLOROETHENE	1 ND	EPA 524.2
TRANS 1,2-DICHLOROETHENE	1 ND	EPA 524.2
ETHYLBENZENE	1 ND	EPA 524.2
METHYLENE CHLORIDE	1 ND	EPA 524.2
TETRACHLOROETHENE	1 ND	EPA 524.2
TOLUENE	1 ND	EPA 524.2
1,1,1-TRICHLOROETHANE	1 ND	EPA 524.2
TRICHLOROETHENE	1 ND	EPA 524.2
TRICHLOROFLUOROMETHANE	1 ND	EPA 524.2
VINYL CHLORIDE	1 ND	EPA 524.2
XYLENES (TOTAL)	3 ND	EPA 524.2

T Please indicate detection limit if analyte is not detected.



Date Prepared/Revised 10/23/2019
DEP USE ONLY
Date Received

**FORM 52
MUNICIPAL WASTE LANDFILL
PRIVATE WATER SUPPLY
QUARTERLY WATER QUALITY ANALYSES**

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General Reference: Act 101 Section 1103	
SECTION A. SITE IDENTIFIER	
Applicant/permittee:	Lancaster County Solid Waste Manage
Site Name:	Frey Farm Landfill
Facility ID (as issued by DEP):	101389
SECTION B. PRIVATE WATER SUPPLY INFORMATION	
INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (DE° MM' SS.S")	
Facility Name:	Frey Farm Landfill
County:	Lancaster County
Township or Municipality:	MANOR TOWNSHIP
Landowner Name:	BECK
Address:	3125 RIVER ROAD
Phone No.:	
Sampling Point:	Latitude: 39° 57' 11.6" Longitude: 76° 26' 5.4"
Depth to Water Level:	ft. Measured from: <input checked="" type="checkbox"/> Land Surface <input type="checkbox"/> TOC
Casing Stick Up:	ft. Elevation of Water Level: _____ ft./MSL
Total Well Depth:	ft.
Sampling Depth:	ft. Sampling Method: <input type="checkbox"/> Pumped <input type="checkbox"/> Bailed
Well Purged:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Well Volumes Purged: _____
Sample Field Filtered (must be 0.45 micron)?:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Sample Date:(mm/dd/yy)	08/23/2019 Sample Collection Time: 1:44 PM
Laboratory(ies) Performing Analysis	ALS Environmental
(include address and phone number)	34 Dogwood Lane Middletown, PA 17057 (717) 944-5541
Lab Accreditation Number(s)	22-293
Lab Analysis Date	08/31/2019
Were any holding times exceeded?:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If yes, please explain in comments field.
Comments:	

FORM 52
MUNICIPAL WASTE LANDFILL
PRIVATE WATER SUPPLY
QUARTERLY WATER QUALITY ANALYSES

Facility I.D. Number

101389

Monitoring Point I.D. No.

PS BECK

Sample Date

08/23/2019

1. Inorganics (Enter all data in mg/l except as noted)

PARAMETER	VALUE	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	SM4500D
BICARBONATE ALKALINITY	224	SM20-2321
CALCIUM, TOTAL	0.86	EPA 200.7
CALCIUM, DISSOLVED	0.77	EPA 200.7
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.2
CHLORIDE	95.9	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	30 ND	EPA 200.7
IRON, DISSOLVED (ug/l)	60 ND	EPA 200.7
MAGNESIUM, TOTAL	0.12	EPA 200.7
MAGNESIUM, DISSOLVED	0.12	EPA 200.7
MANGANESE, TOTAL (ug/l)	2.5 ND	EPA 200.7
MANGANESE, DISSOLVED (ug/l)	5 ND	EPA 200.7
NITRATE-NITROGEN	5.7	EPA 300

T Please indicate detection limit if analyte is not detected.

FORM 52
MUNICIPAL WASTE LANDFILL
PRIVATE WATER SUPPLY
QUARTERLY WATER QUALITY ANALYSES

Facility I.D. Number

101389

Monitoring Point I.D. No.

PS BECK

Sample Date

08/23/2019

1. Inorganics, continued (Enter all data in mg/l except as noted)

PARAMETER	VALUE	ANALYSIS METHOD NUMBER
NITRITE - NITROGEN	0.2 ND	EPA 300
pH-FIELD (SU)	7.36	FIELD
pH-LAB (SU)	7.4	SM4500B
POTASSIUM, TOTAL	3.2	EPA 200.7
POTASSIUM, DISSOLVED	3.1	EPA 200.7
SODIUM, TOTAL	158	EPA 200.7
SODIUM, DISSOLVED	161	EPA 200.7
SPEC. COND., FIELD (umhos/cm)	732	FIELD
SPEC. COND., LAB (umhos/cm)	723	EPA 120.1
SULFATE	13.7	EPA 300
ALKALINITY	224	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	411	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	1.1	SM20-5310B
TOTAL PHENOLICS (ug/l)	5 ND	EPA 420.4
TURBIDITY (NTU)	0.15	SM 2130B

T Please indicate detection limit if analyte is not detected.

FORM 52
MUNICIPAL WASTE LANDFILL
PRIVATE WATER SUPPLY
QUARTERLY WATER QUALITY ANALYSES

Facility I.D. Number

101389

Monitoring Point I.D. No.

PS BECK

Sample Date

08/23/2019

2. Organics (Enter all data in ug/l)

PARAMETER	VALUE	ANALYSIS METHOD NUMBER
BENZENE	1 ND	EPA 524.2
1,2-DIBROMOETHANE	1 ND	EPA 524.2
1,1-DICHLOROETHANE	1 ND	EPA 524.2
1,1-DICHLOROETHENE	1 ND	EPA 524.2
1,2-DICHLOROETHANE	1 ND	EPA 524.2
CIS 1,2-DICHLOROETHENE	1 ND	EPA 524.2
TRANS 1,2-DICHLOROETHENE	1 ND	EPA 524.2
ETHYLBENZENE	1 ND	EPA 524.2
METHYLENE CHLORIDE	1 ND	EPA 524.2
TETRACHLOROETHENE	1 ND	EPA 524.2
TOLUENE	1 ND	EPA 524.2
1,1,1-TRICHLOROETHANE	1 ND	EPA 524.2
TRICHLOROETHENE	1 ND	EPA 524.2
TRICHLOROFLUOROMETHANE	1 ND	EPA 524.2
VINYL CHLORIDE	1 ND	EPA 524.2
XYLENES (TOTAL)	3 ND	EPA 524.2

T Please indicate detection limit if analyte is not detected.



September 8, 2019

Ms. Jordan Gallagher
Lancaster County Solid Waste Authority
1299 Hbg Pike, P.O. Box 4425
Lancaster, PA 17604

Certificate of Analysis

Project Name:	CONTIGUOUS LANDOWNER- 3044 RIVER RD	Workorder:	3053809
Purchase Order:	PO1000126	Workorder ID:	3RD QTR 2019-3044 RIVER RD

Dear Ms. Gallagher:

Enclosed are the analytical results for samples received by the laboratory on Friday, August 23, 2019.

The ALS Environmental laboratory in Middletown, Pennsylvania is a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory and as such, certifies that all applicable test results meet the requirements of NELAP.

If you have any questions regarding this certificate of analysis, please contact Ms. Susan J Scherer (Project Coordinator) at (717) 944-5541.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications section of the ALS website at www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads.

This laboratory report may not be reproduced, except in full, without the written approval of ALS Environmental.

ALS Spring City: 10 Riverside Drive, Spring City, PA 19475 610-948-4903

CC: Mr. Nicholas Rogers , Mr. Daniel Brown , Mr. Jeff Musser

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.

Ms. Susan J Scherer
Project Coordinator

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Vancouver Waterloo · Winnipeg · Yellowknife United States: Cincinnati · Everett · Fort Collins · Holland · Houston · Middletown · Salt Lake City · Spring City · York Mexico: Monterrey

SAMPLE SUMMARY

Workorder: 3053809 3RD QTR 2019-3044 RIVER RD

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
3053809001	3044 River Road, Conestoga, PA	Water	8/23/2019 14:55	8/23/2019 17:59	Mr. Brian G Shade

ALS Environmental Laboratory Locations Across North America

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Vancouver Waterloo · Winnipeg · Yellowknife **United States:** Cincinnati · Everett · Fort Collins · Holland · Houston · Middletown · Salt Lake City · Spring City · York **Mexico:** Monterrey

SAMPLE SUMMARY

Workorder: 3053809 3RD QTR 2019-3044 RIVER RD

Notes

- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 - Field Services Sampling Plan).
- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
- The Chain of Custody document is included as part of this report.
- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are performed in the laboratory and are therefore analyzed out of hold time.
- Method references listed on this report beginning with the prefix "S" followed by a method number (such as S2310B-97) refer to methods from "Standard Methods for the Examination of Water and Wastewater".
- For microbiological analyses, the "Prepared" value is the date/time into the incubator and the "Analyzed" value is the date/time out the incubator.
- An Analysis-Prep Method Cross Reference Table is included after Analytical Results & Qualifiers section in this report.

Standard Acronyms/Flags

J	Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
U	Indicates that the analyte was Not Detected (ND)
N	Indicates presumptive evidence of the presence of a compound
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RDL	Reporting Detection Limit
ND	Not Detected - indicates that the analyte was Not Detected at the RDL
Cntr	Analysis was performed using this container
RegLmt	Regulatory Limit
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
%Rec	Percent Recovery
RPD	Relative Percent Difference
LOD	DoD Limit of Detection
LOQ	DoD Limit of Quantitation
DL	DoD Detection Limit
I	Indicates reported value is greater than or equal to the Method Detection Limit (MDL) but less than the Report Detection Limit (RDL)
(S)	Surrogate Compound
NC	Not Calculated
*	Result outside of QC limits

ALS Environmental Laboratory Locations Across North AmericaCanada: Burlington · Calgary · Centre of Excellence · Edmonton · Fort McMurray · Fort St. John · Grande Prairie · London · Mississauga · Richmond Hill · Saskatoon · Thunder Bay
Vancouver Waterloo · Winnipeg · Yellowknife United States: Cincinnati · Everett · Fort Collins · Holland · Houston · Middletown · Salt Lake City · Spring City · York Mexico: Monterrey

ANALYTICAL RESULTS

Workorder: 3053809 3RD QTR 2019-3044 RIVER RD

Lab ID: **3053809001** Date Collected: 8/23/2019 14:55 Matrix: Water
Sample ID: **3044 River Road, Conestoga, PA** Date Received: 8/23/2019 17:59

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			8/30/19 01:11	VLM	K
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			8/30/19 01:11	VLM	K
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/30/19 01:11	VLM	K
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/30/19 01:11	VLM	K
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/30/19 01:11	VLM	K
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/30/19 01:11	VLM	K
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/30/19 01:11	VLM	K
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			8/30/19 01:11	VLM	K
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			8/30/19 01:11	VLM	K
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			8/30/19 01:11	VLM	K
Toluene	ND		ug/L	1.0	SW846 8260B			8/30/19 01:11	VLM	K
Total Xylenes	ND		ug/L	3.0	SW846 8260B			8/30/19 01:11	VLM	K
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			8/30/19 01:11	VLM	K
Trichloroethene	ND		ug/L	1.0	SW846 8260B			8/30/19 01:11	VLM	K
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			8/30/19 01:11	VLM	K
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			8/30/19 01:11	VLM	K
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	117		%	62 - 133	SW846 8260B			8/30/19 01:11	VLM	K
4-Bromofluorobenzene (S)	105		%	79 - 114	SW846 8260B			8/30/19 01:11	VLM	K
Dibromofluoromethane (S)	102		%	78 - 116	SW846 8260B			8/30/19 01:11	VLM	K
Toluene-d8 (S)	95.7		%	76 - 127	SW846 8260B			8/30/19 01:11	VLM	K
WET CHEMISTRY										
Alkalinity, Bicarbonate	6		mg/L	5	SM2320B-2011			8/28/19 13:55	MBW	C
Alkalinity, Total	6	1	mg/L	5	SM2320B-2011			8/28/19 13:55	MBW	C
Ammonia-N	0.249		mg/L	0.100	D6919-09			9/4/19 13:05	AK	B
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			8/28/19 13:26	AK	B
Chloride	22.7		mg/L	2.0	EPA 300.0			8/24/19 10:33	CHW	C
Fluoride	ND		mg/L	0.20	EPA 300.0			8/24/19 10:33	CHW	C
Halogen, Total Organic (TOX)	ND		ug/L	20.0	SW846 9020B			8/27/19 11:03	PAG	I
Nitrate-N	19.4		mg/L	0.20	EPA 300.0			8/24/19 10:33	CHW	C
Nitrite-N	ND		mg/L	0.20	EPA 300.0			8/24/19 10:33	CHW	C
pH	6.20	2	pH_Units		S4500HB-11			8/28/19 13:55	MBW	C
Phenolics	ND		mg/L	0.005	EPA 420.4	8/27/19 13:01	C_D	8/28/19 08:23	C_D	H
Specific Conductance	213		umhos/cm	1	SM2510B-2011			8/28/19 13:55	MBW	C

ALS Environmental Laboratory Locations Across North America

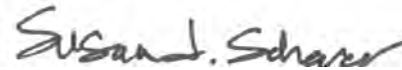
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ANALYTICAL RESULTS

Workorder: 3053809 3RD QTR 2019-3044 RIVER RD

Lab ID: **3053809001** Date Collected: 8/23/2019 14:55 Matrix: Water
Sample ID: **3044 River Road, Conestoga, PA** Date Received: 8/23/2019 17:59

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Sulfate	ND		mg/L	2.0	EPA 300.0			8/24/19 10:33	CHW	C
Total Dissolved Solids	164		mg/L	25	S2540C-11			8/29/19 14:05	D1C	C
Total Organic Carbon (TOC)	ND		mg/L	0.50	SM5310B-2011			8/30/19 21:51	PAG	F
Turbidity	0.17		NTU	0.10	SM2130B-2011			8/24/19 06:00	R2B	C
METALS										
Calcium, Total	13.2		mg/L	0.050	EPA 200.7	8/28/19 13:05	SXC	8/29/19 11:55	MNP	D1
Calcium, Dissolved	14.1		mg/L	0.10	EPA 200.7	8/27/19 08:49	MNP	8/28/19 11:47	MNP	E
Iron, Total	ND		mg/L	0.030	EPA 200.7	8/28/19 13:05	SXC	8/29/19 11:55	MNP	D1
Iron, Dissolved	ND		mg/L	0.060	EPA 200.7	8/27/19 08:49	MNP	8/28/19 11:47	MNP	E
Magnesium, Total	10.1		mg/L	0.050	EPA 200.7	8/28/19 13:05	SXC	8/29/19 11:55	MNP	D1
Magnesium, Dissolved	10.5		mg/L	0.10	EPA 200.7	8/27/19 08:49	MNP	8/28/19 11:47	MNP	E
Manganese, Total	0.029		mg/L	0.0025	EPA 200.7	8/28/19 13:05	SXC	8/29/19 11:55	MNP	D1
Manganese, Dissolved	0.031		mg/L	0.0050	EPA 200.7	8/27/19 08:49	MNP	8/28/19 11:47	MNP	E
Potassium, Total	1.6		mg/L	0.25	EPA 200.7	8/28/19 13:05	SXC	8/29/19 11:55	MNP	D1
Potassium, Dissolved	1.6		mg/L	0.50	EPA 200.7	8/27/19 08:49	MNP	8/28/19 11:47	MNP	E
Sodium, Total	8.2		mg/L	0.25	EPA 200.7	8/28/19 13:05	SXC	8/29/19 11:55	MNP	D1
Sodium, Dissolved	8.5		mg/L	0.50	EPA 200.7	8/27/19 08:49	MNP	8/28/19 11:47	MNP	E
FIELD PARAMETERS										
pH, Field (SM4500B)	6.15		pH_Units		Field			8/23/19 14:55	BGS	N
Specific Conductance, Field	219		umhos/cm	1	Field			8/23/19 14:55	BGS	N
Temperature	17.60		Deg. C		Field			8/23/19 14:55	BGS	N


Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3053809 3RD QTR 2019-3044 RIVER RD

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
3053809001	1	3044 River Road, Conestoga, PA	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3053809001	2	3044 River Road, Conestoga, PA	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				

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ANALYSIS - PREP METHOD CROSS REFERENCE TABLE

Workorder: 3053809 3RD QTR 2019-3044 RIVER RD

Lab ID	Sample ID	Analysis Method	Prep Method
3053809001	3044 River Road, Conestoga, PA	D6919-09	
3053809001	3044 River Road, Conestoga, PA	EPA 200.7	EPA ACID
3053809001	3044 River Road, Conestoga, PA	EPA 200.7	EPA TRMD
3053809001	3044 River Road, Conestoga, PA	EPA 300.0	
3053809001	3044 River Road, Conestoga, PA	EPA 410.4	
3053809001	3044 River Road, Conestoga, PA	EPA 420.4	420.4/9066
3053809001	3044 River Road, Conestoga, PA	Field	
3053809001	3044 River Road, Conestoga, PA	S2540C-11	
3053809001	3044 River Road, Conestoga, PA	S4500HB-11	
3053809001	3044 River Road, Conestoga, PA	SM2130B-2011	
3053809001	3044 River Road, Conestoga, PA	SM2320B-2011	
3053809001	3044 River Road, Conestoga, PA	SM2510B-2011	
3053809001	3044 River Road, Conestoga, PA	SM5310B-2011	
3053809001	3044 River Road, Conestoga, PA	SW846 8260B	
3053809001	3044 River Road, Conestoga, PA	SW846 9020B	

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34 Dogwood Lane • Middletown, PA 17057 • Tel: 717-944-3541 • Fax: 717-944-1430
 2100 Pennsylvania Ave. • Harrisburg, PA 17101 • Tel: 717-631-1199 • www.als.com

**CHAIN OF CUSTODY/
REQUEST FOR ANALYSIS**
**ALL SHADED AREAS MUST BE COMPLETED BY THE CLIENT/
SAMPLER. INSTRUCTIONS ON THE BACK.**

Generated by ALS

COC: **ALS**

1 of 1
 * 3 0 5 3 8 0 9 *

Client Name: Lancaster County Solid Waste MA
 Address: 1299 Harrisburg Pike, P.O. Box 4424
 Lancaster, PA 17604

Contact: Mark Reider

Phone#: (717) 735-0193

Project Name#: LCSWMA - Quarters

Bill To: Lancaster County Solid Waste MA

TAT Normal-Standard TAT is 10-12 business days.
 Rush-Subject to ALS approval and surcharges.
 Date Required: _____ Approved By: _____
 Email? -Y -N
 Fax? -Y -N

Container Type	AG	AN	AN ₂	CG	PL	PL	PL	PL	PL	PL
Container Size	40 ml	125 ml	250 ml	40 ml	250 ml	120 ml	120 ml	120 ml	500 ml	500 ml
Preservative	HCl	H2SO4	H2SO4	HCl	H2SO4	HNO3	HNO3	HNO3	None	None
Matrix	TOC	O-OH	TOX	FM	NH3-N, COD	Dissolved Metals: Ca, Fe, Mg, Mn, K, Na	Metals: Ca, Fe, Mg, Mn, K, Na	PH, TDS, NO2, NO3, Cl, SO4, F, Pb, SpC	Alkalinity, HCO3	

Enter Number of Containers Per Sample or Field Results Below.

Sample Description/Location (as it will appear on the lab report)	Sample Date	Time	G	DW	2	1	1	1	1	1
1 3044RIVERRD	08/23/19	1455	G	DW	2	1	2	23 X	1	1
2								23 8/24/19		
3										
4										
5										
6										
7										
8										
9										
10										

Project Comments: LOGGED BY (signature): _____ REVIEWED BY (signature): _____

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
1 <i>Mark Reider</i> / ALS	8/23/19	1209	<i>Mark Reider</i>	8/23/19	1759
3					
5					
7					
9					

Cooler Temp: 6 Therm ID: 403
 No. of Coolers: _____ Y N Initial
 Custody Seals Present? _____
 (if present) Seals Intact? _____
 Received on Ice? _____
 COC Labels Complete/Accurate? _____
 Cont. in Good Cond.? _____
 Correct Containers? _____
 Correct Sample Volumes? _____
 Correct Preservation? _____
 Headspace/Volatiles? _____
 Courier/Tracking #:

ALS Field Services: Pickup Labor
 Composite_Sampling Rental_Equipment
 Other:

Special Processing: USACE Navy
 State Samples Collected In: NY NJ PA NC
 Reportable to PADEP? Yes No
 PWSID # _____
 EDDS: Format Type: _____

* G=Grab; C=Composite **Matrix - AL=Air; DW=Drinking Water; GW=Groundwater; Oil=Oil; OL=Other Liquid; SL=Soil; WP=Wipe; WW=Wastewater
 ALS ENVIRONMENTAL SHIPPING ADDRESS: 34 DOGWOOD LANE, MIDDLETOWN, PA 17057



301 Fulling Mill Road
 Middletown, PA 17057
 P: (717) 944-5541
 F: (717) 944-1430

Condition of Sample Receipt Form

Client: LCSWMA Work Order #: 3053809 Initials: gn Date: 9/24/19

- | | | | |
|--|---------------------------------------|--------------------------------------|-------------------------------------|
| 1. Were airbills / tracking numbers present and recorded?..... | <input checked="" type="radio"/> NONE | YES | NO |
| Tracking number: _____ | | | |
| 2. Are Custody Seals on shipping containers intact?..... | <input checked="" type="radio"/> NONE | YES | NO |
| 3. Are Custody Seals on sample containers intact?..... | <input checked="" type="radio"/> NONE | YES | NO |
| 4. Is there a COC (Chain-of-Custody) present?..... | <input checked="" type="radio"/> YES | YES | NO |
| 5. Are the COC and bottle labels complete, legible and in agreement?..... | <input checked="" type="radio"/> YES | YES | NO |
| 5a. Does the COC contain sample locations?..... | <input checked="" type="radio"/> YES | YES | NO |
| 5b. Does the COC contain date and time of sample collection for all samples?..... | <input checked="" type="radio"/> YES | YES | NO |
| 5c. Does the COC contain sample collectors name?..... | <input checked="" type="radio"/> YES | YES | NO |
| 5d. Does the COC note the type(s) of preservation for all bottles?..... | <input checked="" type="radio"/> YES | YES | NO |
| 5e. Does the COC note the number of bottles submitted for each sample?..... | <input checked="" type="radio"/> YES | YES | NO |
| 5f. Does the COC note the type of sample, composite or grab?..... | <input checked="" type="radio"/> YES | YES | NO |
| 5g. Does the COC note the matrix of the sample(s)?..... | <input checked="" type="radio"/> YES | YES | NO |
| 6. Are all aqueous samples requiring preservation preserved correctly?..... | N/A | <input checked="" type="radio"/> YES | NO |
| 7. Were all samples placed in the proper containers for the requested analyses, with sufficient volume?..... | | <input checked="" type="radio"/> YES | NO |
| 8. Are all samples within holding times for the requested analyses?..... | | <input checked="" type="radio"/> YES | NO |
| 9. Were all sample containers received intact and headspace free when required? (not broken, leaking, frozen, etc.)..... | | <input checked="" type="radio"/> YES | NO |
| 10. Did we receive trip blanks (applies only for methods EPA 504, EPA 524.2 and 1631E (LL Hg)?..... | <input checked="" type="radio"/> N/A | YES | NO |
| 11. Were the samples received on ice?..... | | <input checked="" type="radio"/> YES | NO |
| 12. Were sample temperatures measured at 0.0-6.0°C..... | | <input checked="" type="radio"/> YES | NO |
| 13. Are the samples DW matrix ? If YES, fill out Reportable Drinking Water questions below..... | | <input checked="" type="radio"/> YES | NO |
| 13a. Are the samples required for SDWA compliance reporting?..... | N/A | YES | <input checked="" type="radio"/> NO |
| 13b. Did the client provide a SDWA PWS ID#?..... | <input checked="" type="radio"/> N/A | YES | NO |
| 13c. Are all aqueous unpreserved SDWA samples pH 5-9?..... | <input checked="" type="radio"/> N/A | YES | NO |
| 13d. Did the client provide the SDWA sample location ID/Description?..... | <input checked="" type="radio"/> N/A | YES | NO |
| 13e. Did the client provide the SDWA sample type (D, E, R, C, P, S)?..... | <input checked="" type="radio"/> N/A | YES | NO |

Cooler #: _____

Temperature (°C): 6 C _____

Thermometer ID: 403 _____

Radiological (µCi): _____

COMMENTS (Required for all NO responses above and any sample non-conformance):



September 8, 2019

Ms. Jordan Gallagher
Lancaster County Solid Waste Authority
1299 Hbg Pike, P.O. Box 4425
Lancaster, PA 17604

Certificate of Analysis

Project Name:	CONTIGUOUS LANDOWNER- 3052 RIVER RD	Workorder:	3053808
Purchase Order:	PO1000126	Workorder ID:	3RD QTR 2019-3052 RIVER RD

Dear Ms. Gallagher:

Enclosed are the analytical results for samples received by the laboratory on Friday, August 23, 2019.

The ALS Environmental laboratory in Middletown, Pennsylvania is a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory and as such, certifies that all applicable test results meet the requirements of NELAP.

If you have any questions regarding this certificate of analysis, please contact Ms. Susan J Scherer (Project Coordinator) at (717) 944-5541.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications section of the ALS website at www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads.

This laboratory report may not be reproduced, except in full, without the written approval of ALS Environmental.

ALS Spring City: 10 Riverside Drive, Spring City, PA 19475 610-948-4903

CC: Mr. Nicholas Rogers , Mr. Daniel Brown , Landowner , Mr. Jeff Musser

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.

Ms. Susan J Scherer
Project Coordinator

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SAMPLE SUMMARY

Workorder: 3053808 3RD QTR 2019-3052 RIVER RD

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
3053808001	3052 River Road, Conestoga, PA	Water	8/23/2019 14:46	8/23/2019 17:59	Mr. Brian G Shade

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SAMPLE SUMMARY

Workorder: 3053808 3RD QTR 2019-3052 RIVER RD

Notes

- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 - Field Services Sampling Plan).
- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
- The Chain of Custody document is included as part of this report.
- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are performed in the laboratory and are therefore analyzed out of hold time.
- Method references listed on this report beginning with the prefix "S" followed by a method number (such as S2310B-97) refer to methods from "Standard Methods for the Examination of Water and Wastewater".
- For microbiological analyses, the "Prepared" value is the date/time into the incubator and the "Analyzed" value is the date/time out the incubator.
- An Analysis-Prep Method Cross Reference Table is included after Analytical Results & Qualifiers section in this report.

Standard Acronyms/Flags

J	Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
U	Indicates that the analyte was Not Detected (ND)
N	Indicates presumptive evidence of the presence of a compound
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RDL	Reporting Detection Limit
ND	Not Detected - indicates that the analyte was Not Detected at the RDL
Cntr	Analysis was performed using this container
RegLmt	Regulatory Limit
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
%Rec	Percent Recovery
RPD	Relative Percent Difference
LOD	DoD Limit of Detection
LOQ	DoD Limit of Quantitation
DL	DoD Detection Limit
I	Indicates reported value is greater than or equal to the Method Detection Limit (MDL) but less than the Report Detection Limit (RDL)
(S)	Surrogate Compound
NC	Not Calculated
*	Result outside of QC limits

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ANALYTICAL RESULTS

Workorder: 3053808 3RD QTR 2019-3052 RIVER RD

Lab ID: **3053808001** Date Collected: 8/23/2019 14:46 Matrix: Water
Sample ID: **3052 River Road, Conestoga, PA** Date Received: 8/23/2019 17:59

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			8/30/19 00:48	VLM	K
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			8/30/19 00:48	VLM	K
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/30/19 00:48	VLM	K
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/30/19 00:48	VLM	K
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/30/19 00:48	VLM	K
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/30/19 00:48	VLM	K
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/30/19 00:48	VLM	K
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			8/30/19 00:48	VLM	K
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			8/30/19 00:48	VLM	K
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			8/30/19 00:48	VLM	K
Toluene	ND		ug/L	1.0	SW846 8260B			8/30/19 00:48	VLM	K
Total Xylenes	ND		ug/L	3.0	SW846 8260B			8/30/19 00:48	VLM	K
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			8/30/19 00:48	VLM	K
Trichloroethene	ND		ug/L	1.0	SW846 8260B			8/30/19 00:48	VLM	K
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			8/30/19 00:48	VLM	K
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			8/30/19 00:48	VLM	K
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	118		%	62 - 133	SW846 8260B			8/30/19 00:48	VLM	K
4-Bromofluorobenzene (S)	104		%	79 - 114	SW846 8260B			8/30/19 00:48	VLM	K
Dibromofluoromethane (S)	103		%	78 - 116	SW846 8260B			8/30/19 00:48	VLM	K
Toluene-d8 (S)	97.3		%	76 - 127	SW846 8260B			8/30/19 00:48	VLM	K
WET CHEMISTRY										
Alkalinity, Bicarbonate	6		mg/L	5	SM2320B-2011			8/28/19 13:46	MBW	C
Alkalinity, Total	6	1	mg/L	5	SM2320B-2011			8/28/19 13:46	MBW	C
Ammonia-N	0.190		mg/L	0.100	D6919-09			9/4/19 12:52	AK	B
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			8/28/19 13:26	AK	B
Chloride	22.3		mg/L	2.0	EPA 300.0			8/24/19 10:17	CHW	C
Fluoride	ND		mg/L	0.20	EPA 300.0			8/24/19 10:17	CHW	C
Halogen, Total Organic (TOX)	ND		ug/L	20.0	SW846 9020B			8/26/19 14:58	PAG	I
Nitrate-N	18.7		mg/L	0.20	EPA 300.0			8/24/19 10:17	CHW	C
Nitrite-N	ND		mg/L	0.20	EPA 300.0			8/24/19 10:17	CHW	C
pH	6.13	2	pH_Units		S4500HB-11			8/28/19 13:46	MBW	C
Phenolics	ND		mg/L	0.005	EPA 420.4	8/27/19 13:01	C_D	8/28/19 08:23	C_D	H
Specific Conductance	211		umhos/cm	1	SM2510B-2011			8/28/19 13:46	MBW	C

ALS Environmental Laboratory Locations Across North America

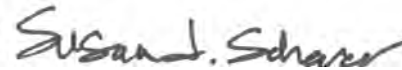
Canada: Burlington · Calgary · Centre of Excellence · Edmonton · Fort McMurray · Fort St. John · Grande Prairie · London · Mississauga · Richmond Hill · Saskatoon · Thunder Bay
Vancouver Waterloo · Winnipeg · Yellowknife United States: Cincinnati · Everett · Fort Collins · Holland · Houston · Middletown · Salt Lake City · Spring City · York Mexico: Monterrey

ANALYTICAL RESULTS

Workorder: 3053808 3RD QTR 2019-3052 RIVER RD

Lab ID: **3053808001** Date Collected: 8/23/2019 14:46 Matrix: Water
Sample ID: **3052 River Road, Conestoga, PA** Date Received: 8/23/2019 17:59

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Sulfate	2.1		mg/L	2.0	EPA 300.0			8/24/19 10:17	CHW	C
Total Dissolved Solids	153		mg/L	25	S2540C-11			8/29/19 14:05	D1C	C
Total Organic Carbon (TOC)	ND		mg/L	0.50	SM5310B-2011			8/30/19 21:51	PAG	F
Turbidity	0.20		NTU	0.10	SM2130B-2011			8/24/19 06:00	R2B	C
METALS										
Calcium, Total	16.5		mg/L	0.050	EPA 200.7	8/28/19 13:05	SXC	8/29/19 12:15	MNP	D1
Calcium, Dissolved	16.8		mg/L	0.10	EPA 200.7	8/27/19 08:49	MNP	8/28/19 11:43	MNP	E
Iron, Total	ND		mg/L	0.030	EPA 200.7	8/28/19 13:05	SXC	8/29/19 12:15	MNP	D1
Iron, Dissolved	ND		mg/L	0.060	EPA 200.7	8/27/19 08:49	MNP	8/28/19 11:43	MNP	E
Magnesium, Total	8.6		mg/L	0.050	EPA 200.7	8/28/19 13:05	SXC	8/29/19 12:15	MNP	D1
Magnesium, Dissolved	8.8		mg/L	0.10	EPA 200.7	8/27/19 08:49	MNP	8/28/19 11:43	MNP	E
Manganese, Total	0.036		mg/L	0.0025	EPA 200.7	8/28/19 13:05	SXC	8/29/19 12:15	MNP	D1
Manganese, Dissolved	0.039		mg/L	0.0050	EPA 200.7	8/27/19 08:49	MNP	8/28/19 11:43	MNP	E
Potassium, Total	1.7		mg/L	0.25	EPA 200.7	8/28/19 13:05	SXC	8/29/19 12:15	MNP	D1
Potassium, Dissolved	1.8		mg/L	0.50	EPA 200.7	8/27/19 08:49	MNP	8/28/19 11:43	MNP	E
Sodium, Total	7.8		mg/L	0.25	EPA 200.7	8/28/19 13:05	SXC	8/29/19 12:15	MNP	D1
Sodium, Dissolved	8.0		mg/L	0.50	EPA 200.7	8/27/19 08:49	MNP	8/28/19 11:43	MNP	E
FIELD PARAMETERS										
pH, Field (SM4500B)	6.09		pH_Units		Field			8/23/19 14:46	BGS	N
Specific Conductance, Field	216		umhos/cm	1	Field			8/23/19 14:46	BGS	N
Temperature	17.50		Deg. C		Field			8/23/19 14:46	BGS	N



Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3053808 3RD QTR 2019-3052 RIVER RD

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
3053808001	1	3052 River Road, Conestoga, PA	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3053808001	2	3052 River Road, Conestoga, PA	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				

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ANALYSIS - PREP METHOD CROSS REFERENCE TABLE

Workorder: 3053808 3RD QTR 2019-3052 RIVER RD

Lab ID	Sample ID	Analysis Method	Prep Method
3053808001	3052 River Road, Conestoga, PA	D6919-09	
3053808001	3052 River Road, Conestoga, PA	EPA 200.7	EPA ACID
3053808001	3052 River Road, Conestoga, PA	EPA 200.7	EPA TRMD
3053808001	3052 River Road, Conestoga, PA	EPA 300.0	
3053808001	3052 River Road, Conestoga, PA	EPA 410.4	
3053808001	3052 River Road, Conestoga, PA	EPA 420.4	420.4/9066
3053808001	3052 River Road, Conestoga, PA	Field	
3053808001	3052 River Road, Conestoga, PA	S2540C-11	
3053808001	3052 River Road, Conestoga, PA	S4500HB-11	
3053808001	3052 River Road, Conestoga, PA	SM2130B-2011	
3053808001	3052 River Road, Conestoga, PA	SM2320B-2011	
3053808001	3052 River Road, Conestoga, PA	SM2510B-2011	
3053808001	3052 River Road, Conestoga, PA	SM5310B-2011	
3053808001	3052 River Road, Conestoga, PA	SW846 8260B	
3053808001	3052 River Road, Conestoga, PA	SW846 9020B	

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34 Dogwood Lane • Middletown, PA 17057 • 717-944-5541 • Fax: 717-944-1430
 Client Name: LCSWMA - Gerald E. Miller, Sr.
 Address: 3052 River Road
 Conestoga, PA 17516
 Contact: Gerald E. Miller, Sr.
 Phone#: (717) 872-5117
 Project Name#: LCSWMA - Quarterly
 Bill To: Lancaster County Solid Waste MA

CHAIN OF CUSTODY / REQUEST FOR ANALYSIS
ALL SHADED AREAS MUST BE COMPLETED BY THE CLIENT / SAMPLER. INSTRUCTIONS ON THE BACK.

COI
 ALS



1 of 1

3 0 5 3 8 0 8 * (Shipping Lab)

Cooler Temp: 9 Therm ID: 403

No. of Coolers: Y N Initial

Custody Seals Present? (if present) Seals Intact? Received on Ice? COC Labels Complete/Accurate? Cont. in Good Cond.? Correct Containers? Correct Sample Volumes? Correct Preservation? Headspace/Volatiles?

Courier/Tracking #:

Sample/COC Comments

ALS Field Services: Pickup Labor

Composite_Sampling Rental_Equipment

Other:

Standard CLP-like USACE Navy USACE

Special Processing

State Samples Collected In

Reportable to PADEP? Yes No Lab Special

PWSID #

EDDS: Format Type-

Container Type: AG 40 ml HCl H2SO4 H2SO4 H2SO4 HNO3 HNO3 HNO3 HNO3 HNO3 HNO3

Volume: 40 ml 125 ml 250 ml 250 ml 250 ml 120 ml 120 ml 120 ml 500 ml

Matrix: TOC OOH TOX SWB46-8260 VOCs FM NH3-N, COD Dissolved Metals: Ca, Fe, Mg, Mn, K, Na Metals: Ca, Fe, Mg, Mn, K, Na PH, TDS, NO2, NO3, Cl, SO4, F, T, SPC Alkalinity, HCO3

Enter Number of Containers Per Sample or Field Results Below.

1	3052RIVERRD	G DW	2	1	2	2	3	1	1	1	1	1
2												
3												
4												
5												
6												
7												
8												
9												
10												

LOGGED BY (signature):

REVIEWED BY (signature):

Date Time: 8/23/19 1759 2

Date Time: 8/23/19 1753

Received By / Company Name: ALS

Received By / Company Name: ALS

Date Time: 8/23/19 1753

Date Time: 8/23/19 1753

Date Time: 8/23/19 1753

Date Time: 8/23/19 1753

Date Time: 8/23/19 1753

Date Time: 8/23/19 1753

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Date Time: 8/23/19 1753

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Date Time: 8/23/19 1753

Date Time: 8/23/19 1753

Date Time: 8/23/19 1753



301 Fulling Mill Road
 Middletown, PA 17057
 P: (717) 944-5541
 F: (717) 944-1430

Condition of Sample Receipt Form

Client: LCSWMA Work Order #: 3053806 Initials: qw Date: 8/24/19

1. Were airbills / tracking numbers present and recorded?..... NONE YES NO
 Tracking number: _____
2. Are Custody Seals on shipping containers intact?..... NONE YES NO
3. Are Custody Seals on sample containers intact?..... NONE YES NO
4. Is there a COC (Chain-of-Custody) present?..... YES NO
5. Are the COC and bottle labels complete, legible and in agreement?..... YES NO
 - 5a. Does the COC contain sample locations?..... YES NO
 - 5b. Does the COC contain date and time of sample collection for all samples?..... YES NO
 - 5c. Does the COC contain sample collectors name?..... YES NO
 - 5d. Does the COC note the type(s) of preservation for all bottles?..... YES NO
 - 5e. Does the COC note the number of bottles submitted for each sample?..... YES NO
 - 5f. Does the COC note the type of sample, composite or grab?..... YES NO
 - 5g. Does the COC note the matrix of the sample(s)?..... YES NO
6. Are all aqueous samples requiring preservation preserved correctly? N/A YES NO
7. Were all samples placed in the proper containers for the requested analyses, with sufficient volume?..... YES NO
8. Are all samples within holding times for the requested analyses?..... YES NO
9. Were all sample containers received intact and headspace free when required? (not broken, leaking, frozen, etc.)..... YES NO
10. Did we receive trip blanks (applies only for methods EPA 504, EPA 524.2 and 1631E (LL Hg)?..... N/A YES NO
11. Were the samples received on ice?..... YES NO
12. Were sample temperatures measured at 0.0-6.0°C... collected same day..... YES NO
13. Are the samples DW matrix ? If YES, fill out Reportable Drinking Water questions below..... YES NO
 - 13a. Are the samples required for SDWA compliance reporting?..... N/A YES NO
 - 13b. Did the client provide a SDWA PWS ID#?..... N/A YES NO
 - 13c. Are all aqueous unpreserved SDWA samples pH 5-9?..... N/A YES NO
 - 13d. Did the client provide the SDWA sample location ID/Description?..... N/A YES NO
 - 13e. Did the client provide the SDWA sample type (D, E, R, C, P, S)?..... N/A YES NO

Cooler #: _____
 Temperature (°C): 9°C _____
 Thermometer ID: 403 _____
 Radiological (µCi): _____

COMMENTS (Required for all NO responses above and any sample non-conformance):



September 8, 2019

Ms. Jordan Gallagher
Lancaster County Solid Waste Authority
1299 Hbg Pike, P.O. Box 4425
Lancaster, PA 17604

Certificate of Analysis

Project Name:	FREY FARM	Workorder:	3053816
Purchase Order:	PO1000126	Workorder ID:	3RD QTR 2019 3056 RIVER RD

Dear Ms. Gallagher:

Enclosed are the analytical results for samples received by the laboratory on Friday, August 23, 2019.

The ALS Environmental laboratory in Middletown, Pennsylvania is a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory and as such, certifies that all applicable test results meet the requirements of NELAP.

If you have any questions regarding this certificate of analysis, please contact Ms. Susan J Scherer (Project Coordinator) at (717) 944-5541.

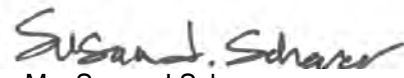
Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications section of the ALS website at www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads.

This laboratory report may not be reproduced, except in full, without the written approval of ALS Environmental.

ALS Spring City: 10 Riverside Drive, Spring City, PA 19475 610-948-4903

CC: Mr. Nicholas Rogers , Mr. Daniel Brown , Mr. Jeff Musser

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.


Ms. Susan J Scherer
Project Coordinator

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SAMPLE SUMMARY

Workorder: 3053816 3RD QTR 2019 3056 RIVER RD

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
3053816001	3056RIVERRD	Water	8/23/2019 14:39	8/23/2019 17:59	Mr. Brian G Shade

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SAMPLE SUMMARY

Workorder: 3053816 3RD QTR 2019 3056 RIVER RD

Notes

- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 - Field Services Sampling Plan).
- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
- The Chain of Custody document is included as part of this report.
- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are performed in the laboratory and are therefore analyzed out of hold time.
- Method references listed on this report beginning with the prefix "S" followed by a method number (such as S2310B-97) refer to methods from "Standard Methods for the Examination of Water and Wastewater".
- For microbiological analyses, the "Prepared" value is the date/time into the incubator and the "Analyzed" value is the date/time out the incubator.
- An Analysis-Prep Method Cross Reference Table is included after Analytical Results & Qualifiers section in this report.

Standard Acronyms/Flags

J	Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
U	Indicates that the analyte was Not Detected (ND)
N	Indicates presumptive evidence of the presence of a compound
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RDL	Reporting Detection Limit
ND	Not Detected - indicates that the analyte was Not Detected at the RDL
Cntr	Analysis was performed using this container
RegLmt	Regulatory Limit
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
%Rec	Percent Recovery
RPD	Relative Percent Difference
LOD	DoD Limit of Detection
LOQ	DoD Limit of Quantitation
DL	DoD Detection Limit
I	Indicates reported value is greater than or equal to the Method Detection Limit (MDL) but less than the Report Detection Limit (RDL)
(S)	Surrogate Compound
NC	Not Calculated
*	Result outside of QC limits

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ANALYTICAL RESULTS

Workorder: 3053816 3RD QTR 2019 3056 RIVER RD

Lab ID: **3053816001** Date Collected: 8/23/2019 14:39 Matrix: Water
Sample ID: **3056RIVERRD** Date Received: 8/23/2019 17:59

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			8/30/19 02:44	VLM	K
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			8/30/19 02:44	VLM	K
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/30/19 02:44	VLM	K
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/30/19 02:44	VLM	K
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/30/19 02:44	VLM	K
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/30/19 02:44	VLM	K
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/30/19 02:44	VLM	K
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			8/30/19 02:44	VLM	K
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			8/30/19 02:44	VLM	K
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			8/30/19 02:44	VLM	K
Toluene	ND		ug/L	1.0	SW846 8260B			8/30/19 02:44	VLM	K
Total Xylenes	ND		ug/L	3.0	SW846 8260B			8/30/19 02:44	VLM	K
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			8/30/19 02:44	VLM	K
Trichloroethene	ND		ug/L	1.0	SW846 8260B			8/30/19 02:44	VLM	K
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			8/30/19 02:44	VLM	K
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			8/30/19 02:44	VLM	K
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	119		%	62 - 133	SW846 8260B			8/30/19 02:44	VLM	K
4-Bromofluorobenzene (S)	105		%	79 - 114	SW846 8260B			8/30/19 02:44	VLM	K
Dibromofluoromethane (S)	104		%	78 - 116	SW846 8260B			8/30/19 02:44	VLM	K
Toluene-d8 (S)	97.2		%	76 - 127	SW846 8260B			8/30/19 02:44	VLM	K
WET CHEMISTRY										
Alkalinity, Bicarbonate	ND		mg/L	5	SM2320B-2011			8/28/19 14:28	MBW	C
Alkalinity, Total	ND	1	mg/L	5	SM2320B-2011			8/28/19 14:28	MBW	C
Ammonia-N	0.179		mg/L	0.100	D6919-09			9/5/19 02:54	AK	B
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			8/28/19 13:26	AK	B
Chloride	26.3		mg/L	2.0	EPA 300.0			8/24/19 06:54	CHW	C
Fluoride	ND		mg/L	0.20	EPA 300.0			8/24/19 06:54	CHW	C
Halogen, Total Organic (TOX)	ND		ug/L	20.0	SW846 9020B			8/28/19 12:13	PAG	I
Nitrate-N	20.0		mg/L	0.20	EPA 300.0			8/24/19 06:54	CHW	C
Nitrite-N	ND		mg/L	0.20	EPA 300.0			8/24/19 06:54	CHW	C
pH	5.18	2	pH_Units		S4500HB-11			8/28/19 14:28	MBW	C
Phenolics	ND		mg/L	0.005	EPA 420.4	8/27/19 13:01	C_D	8/28/19 08:23	C_D	H
Specific Conductance	237		umhos/cm	1	SM2510B-2011			8/28/19 14:28	MBW	C

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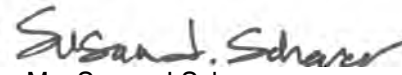
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ANALYTICAL RESULTS

Workorder: 3053816 3RD QTR 2019 3056 RIVER RD

Lab ID: **3053816001** Date Collected: 8/23/2019 14:39 Matrix: Water
Sample ID: **3056RIVERRD** Date Received: 8/23/2019 17:59

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Sulfate	ND		mg/L	2.0	EPA 300.0			8/24/19 06:54	CHW	C
Total Dissolved Solids	186		mg/L	25	S2540C-11			8/29/19 14:05	D1C	C
Total Organic Carbon (TOC)	ND		mg/L	0.50	SM5310B-2011			8/31/19 03:15	PAG	F
Turbidity	0.17		NTU	0.10	SM2130B-2011			8/24/19 06:00	R2B	C
METALS										
Calcium, Total	10.2		mg/L	0.050	EPA 200.7	8/28/19 13:05	SXC	8/29/19 11:35	MNP	D1
Calcium, Dissolved	10.6		mg/L	0.10	EPA 200.7	8/27/19 08:49	MNP	8/28/19 12:00	MNP	E
Iron, Total	ND		mg/L	0.030	EPA 200.7	8/28/19 13:05	SXC	8/29/19 11:35	MNP	D1
Iron, Dissolved	ND		mg/L	0.060	EPA 200.7	8/27/19 08:49	MNP	8/28/19 12:00	MNP	E
Magnesium, Total	13.5		mg/L	0.050	EPA 200.7	8/28/19 13:05	SXC	8/29/19 11:35	MNP	D1
Magnesium, Dissolved	13.7		mg/L	0.10	EPA 200.7	8/27/19 08:49	MNP	8/28/19 12:00	MNP	E
Manganese, Total	0.13		mg/L	0.0025	EPA 200.7	8/28/19 13:05	SXC	8/29/19 11:35	MNP	D1
Manganese, Dissolved	0.13		mg/L	0.0050	EPA 200.7	8/27/19 08:49	MNP	8/28/19 12:00	MNP	E
Potassium, Total	2.1		mg/L	0.25	EPA 200.7	8/28/19 13:05	SXC	8/29/19 11:35	MNP	D1
Potassium, Dissolved	2.1		mg/L	0.50	EPA 200.7	8/27/19 08:49	MNP	8/28/19 12:00	MNP	E
Sodium, Total	8.4		mg/L	0.25	EPA 200.7	8/28/19 13:05	SXC	8/29/19 11:35	MNP	D1
Sodium, Dissolved	8.7		mg/L	0.50	EPA 200.7	8/27/19 08:49	MNP	8/28/19 12:00	MNP	E
FIELD PARAMETERS										
pH, Field (SM4500B)	5.22		pH_Units		Field			8/23/19 14:39	BGS	N
Specific Conductance, Field	248		umhos/cm	1	Field			8/23/19 14:39	BGS	N
Temperature	17.40		Deg. C		Field			8/23/19 14:39	BGS	N



Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3053816 3RD QTR 2019 3056 RIVER RD

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
3053816001	1	3056RIVERRD	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3053816001	2	3056RIVERRD	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				

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ANALYSIS - PREP METHOD CROSS REFERENCE TABLE

Workorder: 3053816 3RD QTR 2019 3056 RIVER RD

Lab ID	Sample ID	Analysis Method	Prep Method
3053816001	3056RIVERRD	D6919-09	
3053816001	3056RIVERRD	EPA 200.7	EPA ACID
3053816001	3056RIVERRD	EPA 200.7	EPA TRMD
3053816001	3056RIVERRD	EPA 300.0	
3053816001	3056RIVERRD	EPA 410.4	
3053816001	3056RIVERRD	EPA 420.4	420.4/9066
3053816001	3056RIVERRD	Field	
3053816001	3056RIVERRD	S2540C-11	
3053816001	3056RIVERRD	S4500HB-11	
3053816001	3056RIVERRD	SM2130B-2011	
3053816001	3056RIVERRD	SM2320B-2011	
3053816001	3056RIVERRD	SM2510B-2011	
3053816001	3056RIVERRD	SM5310B-2011	
3053816001	3056RIVERRD	SW846 8260B	
3053816001	3056RIVERRD	SW846 9020B	

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**CHAIN OF CUSTODY/
REQUEST FOR ANALYSIS**
**ALL SHADED AREAS MUST BE COMPLETED BY THE CLIENT /
SAMPLER. INSTRUCTIONS ON THE BACK.**

COC
ALS

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* 3 0 5 3 8 1 6 *

Receipt Information (completed by receiving Lab)
 Cooler Temp: 22 Therm ID: 1703
 No. of Coolers: Y N Initial

Custody Seals Present?
 (If present) Seals Intact?
 Received on Ice?
 COC Labels Complete/Accurate?
 Cont. in Good Cond.?
 Correct Containers?
 Correct Sample Volumes?
 Correct Preservation?
 Headspace/Volatiles?

ANALYSES/METHOD REQUESTED

Container Type	AG	AN	AN	CG	PL	PL	PL	PL	PL	PL
Container Size	40 ml	125 ml	250 ml	40 ml	250 ml	120 ml	120 ml	120 ml	500 ml	500 ml
Preservation	HCl	H2SO4	H2SO4	HCl	H2SO4	HNO3	HNO3	HNO3	None	None

Client Name: Lancaster County Solid Waste MA
 Address: 1299 Harrisburg Pike, P.O. Box 4424
 Lancaster, PA 17604
 Contact: Mark Reider
 Phone#: (717) 735-0193
 Project Name#: LCSWMA - Quarterly
 Bill To: Lancaster County Solid Waste MA

Normal-Standard TAT is 10-12 business days.
 Rush-Subject to ALS approval and surcharges.
 Date Required: _____ Approved By: _____
 Email? -Y -N
 Fax? -Y -N

Sample Description/Location (as it will appear on the lab report)	Sample Date	Time	Enter Number of Containers Per Sample or Field Results Below.										Sample/COC Comments	
			TOC	O-OH	TOX	FM	NH3-N, COD	Dissolved Metals: Ca, Fe, Mg, Mn, K, Na	Metals: Ca, Fe, Mg, Mn, K, Na	pH, TDS, NO2, NO3, Cl, SO4, F, T, SPC	Alkalinity, HCO3			
1 3056RIVERRD	08/23/19	1439	2	1	2	2	2	1	1	1	1	1	1	
2														
3														
4														
5														
6														
7														
8														
9														
10														

ALS Field Services: Pickup Labor
 Composite_Sampling Rental_Equipment
 Other:

Standard CLP-like USACE
 Deliverables Navy
 Reportable to PADEP? Yes No
 PWSID # _____
 EDDS: Format Type: _____

Special Processing
 USACE Navy
 State Samples Collected In
 NY NJ PA NC

Project Comments:
 Relinquished By / Company Name: Mark Reider / ACS
 Date, Time: 8/23/19 1259
 Received By / Company Name: [Signature]
 Date, Time: 8/29/19 1751

LOGGED BY (signature): _____
 REVIEWED BY (signature): _____

* G=Grab; C=Composite **Matrix - AL=Air; DW=Drinking Water; GW=Groundwater; Oil=Oil; OL=Other Liquid; SL=Sludge; WP=Wipe; WW=Wastewater
 ALS ENVIRONMENTAL SHIPPING ADDRESS: 34 DOGWOOD LANE, MIDDLETOWN, PA 17057



301 Fulling Mill Road
Middletown, PA 17057

P: (717) 944-5541
F: (717) 944-1430

Condition of Sample Receipt Form

Client: LCSWMA Work Order #: 3053816 Initials: qw Date: 9/24/19

- | | | | |
|--|---------------------------------------|--------------------------------------|-------------------------------------|
| 1. Were airbills / tracking numbers present and recorded?..... | <input checked="" type="radio"/> NONE | YES | NO |
| Tracking number: _____ | | | |
| 2. Are Custody Seals on shipping containers intact?..... | <input checked="" type="radio"/> NONE | YES | NO |
| 3. Are Custody Seals on sample containers intact?..... | <input checked="" type="radio"/> NONE | YES | NO |
| 4. Is there a COC (Chain-of-Custody) present?..... | <input checked="" type="radio"/> YES | YES | NO |
| 5. Are the COC and bottle labels complete, legible and in agreement?..... | <input checked="" type="radio"/> YES | YES | NO |
| 5a. Does the COC contain sample locations?..... | <input checked="" type="radio"/> YES | YES | NO |
| 5b. Does the COC contain date and time of sample collection for all samples?..... | <input checked="" type="radio"/> YES | YES | NO |
| 5c. Does the COC contain sample collectors name?..... | <input checked="" type="radio"/> YES | YES | NO |
| 5d. Does the COC note the type(s) of preservation for all bottles?..... | <input checked="" type="radio"/> YES | YES | NO |
| 5e. Does the COC note the number of bottles submitted for each sample?..... | <input checked="" type="radio"/> YES | YES | NO |
| 5f. Does the COC note the type of sample, composite or grab?..... | <input checked="" type="radio"/> YES | YES | NO |
| 5g. Does the COC note the matrix of the sample(s)?..... | <input checked="" type="radio"/> YES | YES | NO |
| 6. Are all aqueous samples requiring preservation preserved correctly?..... | N/A | <input checked="" type="radio"/> YES | NO |
| 7. Were all samples placed in the proper containers for the requested analyses, with sufficient volume?..... | <input checked="" type="radio"/> YES | YES | NO |
| 8. Are all samples within holding times for the requested analyses?..... | <input checked="" type="radio"/> YES | YES | NO |
| 9. Were all sample containers received intact and headspace free when required? (not broken, leaking, frozen, etc.)..... | <input checked="" type="radio"/> YES | YES | NO |
| 10. Did we receive trip blanks (applies only for methods EPA 504, EPA 524.2 and 1631E (LL Hg)?..... | <input checked="" type="radio"/> N/A | YES | NO |
| 11. Were the samples received on ice?..... | <input checked="" type="radio"/> YES | YES | NO |
| 12. Were sample temperatures measured at 0.0-6.0°C..... | <input checked="" type="radio"/> YES | YES | NO |
| 13. Are the samples DW matrix ? If YES, fill out Reportable Drinking Water questions below..... | <input checked="" type="radio"/> YES | YES | NO |
| 13a. Are the samples required for SDWA compliance reporting?..... | N/A | YES | <input checked="" type="radio"/> NO |
| 13b. Did the client provide a SDWA PWS ID#?..... | <input checked="" type="radio"/> N/A | YES | NO |
| 13c. Are all aqueous unpreserved SDWA samples pH 5-9?..... | <input checked="" type="radio"/> N/A | YES | NO |
| 13d. Did the client provide the SDWA sample location ID/Description?..... | <input checked="" type="radio"/> N/A | YES | NO |
| 13e. Did the client provide the SDWA sample type (D, E, R, C, P, S)?..... | <input checked="" type="radio"/> N/A | YES | NO |

Cooler #: _____
 Temperature (°C): 2°C
 Thermometer ID: 403
 Radiological (µCi): _____

COMMENTS (Required for all NO responses above and any sample non-conformance):

September 17, 2019

Mr. Daniel Brown
Lancaster County Solid Waste Authority
1299 Hbg Pike, P.O. Box 4425
Lancaster, PA 17604

Certificate of Analysis

Project Name:	FREY FARM	Workorder:	3054572
Purchase Order:	PO1000126	Workorder ID:	3RD QTR 2019 3060 RIVER RD

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Wednesday, August 28, 2019.

The ALS Environmental laboratory in Middletown, Pennsylvania is a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory and as such, certifies that all applicable test results meet the requirements of NELAP.

If you have any questions regarding this certificate of analysis, please contact Ms. Susan J Scherer (Project Coordinator) at (717) 944-5541.

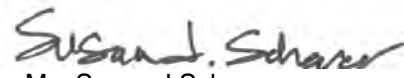
Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications section of the ALS website at www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads.

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ALS Spring City: 10 Riverside Drive, Spring City, PA 19475 610-948-4903

CC: Mr. Nicholas Rogers , Ms. Jordan Gallagher , Mr. Jeff Musser

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.


Ms. Susan J Scherer
Project Coordinator

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SAMPLE SUMMARY

Workorder: 3054572 3RD QTR 2019 3060 RIVER RD

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
3054572001	3060RIVERRD	Water	8/28/2019 16:37	8/28/2019 17:56	Mr. Brian G Shade

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SAMPLE SUMMARY

Workorder: 3054572 3RD QTR 2019 3060 RIVER RD

Notes

- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 - Field Services Sampling Plan).
- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
- The Chain of Custody document is included as part of this report.
- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are performed in the laboratory and are therefore analyzed out of hold time.
- Method references listed on this report beginning with the prefix "S" followed by a method number (such as S2310B-97) refer to methods from "Standard Methods for the Examination of Water and Wastewater".
- For microbiological analyses, the "Prepared" value is the date/time into the incubator and the "Analyzed" value is the date/time out the incubator.
- An Analysis-Prep Method Cross Reference Table is included after Analytical Results & Qualifiers section in this report.

Standard Acronyms/Flags

J	Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
U	Indicates that the analyte was Not Detected (ND)
N	Indicates presumptive evidence of the presence of a compound
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RDL	Reporting Detection Limit
ND	Not Detected - indicates that the analyte was Not Detected at the RDL
Cntr	Analysis was performed using this container
RegLmt	Regulatory Limit
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
%Rec	Percent Recovery
RPD	Relative Percent Difference
LOD	DoD Limit of Detection
LOQ	DoD Limit of Quantitation
DL	DoD Detection Limit
I	Indicates reported value is greater than or equal to the Method Detection Limit (MDL) but less than the Report Detection Limit (RDL)
(S)	Surrogate Compound
NC	Not Calculated
*	Result outside of QC limits

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ANALYTICAL RESULTS

Workorder: 3054572 3RD QTR 2019 3060 RIVER RD

Lab ID: **3054572001** Date Collected: 8/28/2019 16:37 Matrix: Water
Sample ID: **3060RIVERRD** Date Received: 8/28/2019 17:56

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
WET CHEMISTRY										
Alkalinity, Bicarbonate	ND		mg/L	5	SM2320B-2011			8/31/19 09:21	MBW	C
Alkalinity, Total	ND	1	mg/L	5	SM2320B-2011			8/31/19 09:21	MBW	C
Ammonia-N	ND		mg/L	0.100	D6919-09			9/6/19 07:07	AK	B
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			9/4/19 19:56	AK	B
Chloride	20.3		mg/L	2.0	EPA 300.0			8/29/19 14:10	CHW	C
Fluoride	ND		mg/L	0.20	EPA 300.0			8/29/19 14:10	CHW	C
Halogen, Total Organic (TOX)	ND		ug/L	20.0	SW846 9020B			8/29/19 13:56	PAG	I
Nitrate-N	14.5		mg/L	0.20	EPA 300.0			8/29/19 14:10	CHW	C
Nitrite-N	ND		mg/L	0.20	EPA 300.0			8/29/19 14:10	CHW	C
pH	5.39	2	pH_Units		S4500HB-11			8/31/19 09:21	MBW	C
Phenolics	ND		mg/L	0.005	EPA 420.4	8/30/19 13:05	C_D	9/2/19 05:55	C_D	H
Specific Conductance	187		umhos/cm	1	SM2510B-2011			8/31/19 09:21	MBW	C
Sulfate	9.3		mg/L	2.0	EPA 300.0			8/29/19 14:10	CHW	C
Total Dissolved Solids	152		mg/L	25	S2540C-11			9/3/19 14:42	D1C	C
Total Organic Carbon (TOC)	ND		mg/L	0.50	SM5310B-2011			8/31/19 18:57	PAG	F
Turbidity	0.57		NTU	0.10	SM2130B-2011			8/29/19 06:08	R2B	C
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			8/31/19 00:09	VLM	K
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			8/31/19 00:09	VLM	K
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/31/19 00:09	VLM	K
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/31/19 00:09	VLM	K
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/31/19 00:09	VLM	K
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/31/19 00:09	VLM	K
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/31/19 00:09	VLM	K
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			8/31/19 00:09	VLM	K
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			8/31/19 00:09	VLM	K
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			8/31/19 00:09	VLM	K
Toluene	ND		ug/L	1.0	SW846 8260B			8/31/19 00:09	VLM	K
Total Xylenes	ND		ug/L	3.0	SW846 8260B			8/31/19 00:09	VLM	K
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			8/31/19 00:09	VLM	K
Trichloroethene	ND		ug/L	1.0	SW846 8260B			8/31/19 00:09	VLM	K
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			8/31/19 00:09	VLM	K
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			8/31/19 00:09	VLM	K
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>

ALS Environmental Laboratory Locations Across North America

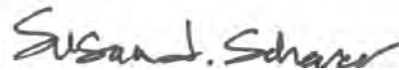
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ANALYTICAL RESULTS

Workorder: 3054572 3RD QTR 2019 3060 RIVER RD

Lab ID: **3054572001** Date Collected: 8/28/2019 16:37 Matrix: Water
Sample ID: **3060RIVERRD** Date Received: 8/28/2019 17:56

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
1,2-Dichloroethane-d4 (S)	119		%	62 - 133	SW846 8260B			8/31/19 00:09	VLM	K
4-Bromofluorobenzene (S)	105		%	79 - 114	SW846 8260B			8/31/19 00:09	VLM	K
Dibromofluoromethane (S)	104		%	78 - 116	SW846 8260B			8/31/19 00:09	VLM	K
Toluene-d8 (S)	96.6		%	76 - 127	SW846 8260B			8/31/19 00:09	VLM	K
METALS										
Calcium, Total	8.9		mg/L	0.050	EPA 200.7	8/30/19 14:15	SXC	9/3/19 10:01	MNP	D1
Calcium, Dissolved	8.6		mg/L	0.10	EPA 200.7	8/30/19 07:57	MNP	9/4/19 14:00	MNP	E
Iron, Total	0.032		mg/L	0.030	EPA 200.7	8/30/19 14:15	SXC	9/3/19 10:01	MNP	D1
Iron, Dissolved	ND		mg/L	0.060	EPA 200.7	8/30/19 07:57	MNP	9/4/19 14:00	MNP	E
Magnesium, Total	10.5		mg/L	0.050	EPA 200.7	8/30/19 14:15	SXC	9/3/19 10:01	MNP	D1
Magnesium, Dissolved	10.3		mg/L	0.10	EPA 200.7	8/30/19 07:57	MNP	9/4/19 14:00	MNP	E
Manganese, Total	0.11		mg/L	0.0025	EPA 200.7	8/30/19 14:15	SXC	9/3/19 10:01	MNP	D1
Manganese, Dissolved	0.10		mg/L	0.0050	EPA 200.7	8/30/19 07:57	MNP	9/4/19 14:00	MNP	E
Potassium, Total	2.0		mg/L	0.25	EPA 200.7	8/30/19 14:15	SXC	9/3/19 10:01	MNP	D1
Potassium, Dissolved	1.9		mg/L	0.50	EPA 200.7	8/30/19 07:57	MNP	9/4/19 14:00	MNP	E
Sodium, Total	9.0		mg/L	0.25	EPA 200.7	8/30/19 14:15	SXC	9/3/19 10:01	MNP	D1
Sodium, Dissolved	8.1		mg/L	0.50	EPA 200.7	8/30/19 07:57	MNP	9/4/19 14:00	MNP	E
FIELD PARAMETERS										
pH, Field (SM4500B)	5.27		pH_Units		Field			8/28/19 16:37	BGS	
Specific Conductance, Field	178		umhos/cm	1	Field			8/28/19 16:37	BGS	
Temperature	16.20		Deg. C		Field			8/28/19 16:37	BGS	



Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3054572 3RD QTR 2019 3060 RIVER RD

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
3054572001	1	3060RIVERRD	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3054572001	2	3060RIVERRD	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				

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ANALYSIS - PREP METHOD CROSS REFERENCE TABLE

Workorder: 3054572 3RD QTR 2019 3060 RIVER RD

Lab ID	Sample ID	Analysis Method	Prep Method
3054572001	3060RIVERRD	D6919-09	
3054572001	3060RIVERRD	EPA 200.7	EPA ACID
3054572001	3060RIVERRD	EPA 200.7	EPA TRMD
3054572001	3060RIVERRD	EPA 300.0	
3054572001	3060RIVERRD	EPA 410.4	
3054572001	3060RIVERRD	EPA 420.4	420.4/9066
3054572001	3060RIVERRD	Field	
3054572001	3060RIVERRD	S2540C-11	
3054572001	3060RIVERRD	S4500HB-11	
3054572001	3060RIVERRD	SM2130B-2011	
3054572001	3060RIVERRD	SM2320B-2011	
3054572001	3060RIVERRD	SM2510B-2011	
3054572001	3060RIVERRD	SM5310B-2011	
3054572001	3060RIVERRD	SW846 8260B	
3054572001	3060RIVERRD	SW846 9020B	

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 Client Name: Lancaster County Solid Waste MA
 Address: 1299 Harrisburg Pike, P.O. Box 4424
 Lancaster, PA 17604
 Contact: Mark Reider
 Phone#: (717) 735-0193
 Project Name#: LCSWMA - Quartersy
 Bill To: Lancaster County Solid Waste MA

Cooler Temp: 79 Therm ID: 4072
 No. of Coolers: Y N Initial

Custody Seals Present?
 (if present) Seals Intact?
 Received on Ice?
 COC Labels Completed/Accurate?
 Cont. in Good Cond.?
 Correct Containers?
 Correct Sample Volumes?
 Correct Preservation?
 Headspace/Volatiles?

ANALYSES/METHOD REQUESTED

Container Type	AG	AN	AN	CG	PL	PL	PL	PL	PL
Container Size	40 ml	125 ml	250 ml	40 ml	500 ml	250 ml	250 ml	250 ml	500 ml
Preservative	HCl	H2SO4	H2SO4	HCl	H2SO4	HNO3	HNO3	HNO3	None

Enter Number of Containers Per Sample or Field Results Below.

Matrix	TOC	O-OH	TOX	SW846-8260 VOCs	FM	NH3-N, COD	Dissolved Metals: Ca, Fe, Mg, Mn, K, Na	Metals: Ca, Fe, Mg, Mn, K, Na	PH, TDS, NO2, NO3, Cl, SO4, F, Pb, SpC	Alkalinity, HCO3
G or C	2	1	2	2	X	1	1	1	1	1
DW	2	1	2	2		1	1	1	1	1

ALS Field Services: Pickup Labor
 Composite Sampling Rental Equipment
 Other:

Standard
 CLP-like
 USACE

Special Processing
 USACE
 Navy

State Samples Collected in
 NY
 NJ
 PA
 NC

ALS Field Services: Pickup Labor
 Composite Sampling Rental Equipment
 Other:

Standard
 CLP-like
 USACE

Special Processing
 USACE
 Navy

State Samples Collected in
 NY
 NJ
 PA
 NC

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 Composite Sampling Rental Equipment
 Other:

Standard
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 USACE

Special Processing
 USACE
 Navy

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 PA
 NC

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State Samples Collected in
 NY
 NJ
 PA
 NC

ALS Field Services: Pickup Labor
 Composite Sampling Rental Equipment
 Other:

Standard
 CLP-like
 USACE

Special Processing
 USACE
 Navy

State Samples Collected in
 NY
 NJ
 PA
 NC

Project Comments:
 Relinquished By / Company Name: ALS
 Date: 8/28/19
 Time: 1637
 Received By / Company Name: [Signature]
 Date: 8/28/19
 Time: 1758





301 Fulling Mill Road
Middletown, PA 17057

P: (717) 944-5541

F: (717) 944-1430

Condition of Sample Receipt Form

Client: LCSW Work Order #: 3054572 Initials: DN Date: 8/24

- | | | | |
|--|-------------|------------|-----------|
| 1. Were airbills / tracking numbers present and recorded?..... | <u>NONE</u> | YES | NO |
| Tracking number: _____ | | | |
| 2. Are Custody Seals on shipping containers intact?..... | <u>NONE</u> | YES | NO |
| 3. Are Custody Seals on sample containers intact?..... | <u>NONE</u> | YES | NO |
| 4. Is there a COC (Chain-of-Custody) present?..... | | <u>YES</u> | NO |
| 5. Are the COC and bottle labels complete, legible and in agreement?..... | | <u>YES</u> | NO |
| 5a. Does the COC contain sample locations?..... | | <u>YES</u> | NO |
| 5b. Does the COC contain date and time of sample collection for all samples?..... | | <u>YES</u> | NO |
| 5c. Does the COC contain sample collectors name?..... | | <u>YES</u> | NO |
| 5d. Does the COC note the type(s) of preservation for all bottles?..... | | <u>YES</u> | NO |
| 5e. Does the COC note the number of bottles submitted for each sample?..... | | <u>YES</u> | NO |
| 5f. Does the COC note the type of sample, composite or grab?..... | | <u>YES</u> | NO |
| 5g. Does the COC note the matrix of the sample(s)?..... | | <u>YES</u> | NO |
| 6. Are all aqueous samples requiring preservation preserved correctly? | <u>N/A</u> | YES | NO |
| 7. Were all samples placed in the proper containers for the requested analyses, with sufficient volume?..... | | <u>YES</u> | NO |
| 8. Are all samples within holding times for the requested analyses?..... | | <u>NO</u> | NO |
| 9. Were all sample containers received intact and headspace free when required? (not broken, leaking, frozen, etc.)..... | | <u>YES</u> | NO |
| 10. Did we receive trip blanks (applies only for methods EPA 504, EPA 524.2 and 1631E (LL Hg)?..... | <u>N/A</u> | YES | NO |
| 11. Were the samples received on ice?..... | | <u>YES</u> | NO |
| 12. Were sample temperatures measured at 0.0-6.0°C..... | | YES | <u>NO</u> |
| 13. Are the samples DW matrix ? If YES, fill out Reportable Drinking Water questions below..... | | YES | <u>NO</u> |
| 13a. Are the samples required for SDWA compliance reporting?..... | <u>N/A</u> | YES | NO |
| 13b. Did the client provide a SDWA PWS ID#?..... | <u>N/A</u> | YES | NO |
| 13c. Are all aqueous unpreserved SDWA samples pH 5-9?..... | <u>N/A</u> | YES | NO |
| 13d. Did the client provide the SDWA sample location ID/Description?..... | <u>N/A</u> | YES | NO |
| 13e. Did the client provide the SDWA sample type (D, E, R, C, P, S)?..... | <u>N/A</u> | YES | NO |

Cooler #: _____

Temperature (°C): 19 _____

Thermometer ID: 402 _____

Radiological (µCi): _____

COMMENTS (Required for all NO responses above and any sample non-conformance):

-> Temp > 6°
- Same day
-> PH is out of hold



September 8, 2019

Ms. Jordan Gallagher
Lancaster County Solid Waste Authority
1299 Hbg Pike, P.O. Box 4425
Lancaster, PA 17604

Certificate of Analysis

Project Name:	CONTIGUOUS LANDOWNER- 3076 RIVER RD	Workorder:	3053811
Purchase Order:	PO1000126	Workorder ID:	3RD QTR 2019-3076 RIVER RD

Dear Ms. Gallagher:

Enclosed are the analytical results for samples received by the laboratory on Friday, August 23, 2019.

The ALS Environmental laboratory in Middletown, Pennsylvania is a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory and as such, certifies that all applicable test results meet the requirements of NELAP.

If you have any questions regarding this certificate of analysis, please contact Ms. Susan J Scherer (Project Coordinator) at (717) 944-5541.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications section of the ALS website at www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads.

This laboratory report may not be reproduced, except in full, without the written approval of ALS Environmental.

ALS Spring City: 10 Riverside Drive, Spring City, PA 19475 610-948-4903

CC: Mr. Nicholas Rogers , Mr. Daniel Brown , Landowner , Mr. Jeff Musser

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.

Ms. Susan J Scherer
Project Coordinator

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Vancouver Waterloo · Winnipeg · Yellowknife United States: Cincinnati · Everett · Fort Collins · Holland · Houston · Middletown · Salt Lake City · Spring City · York Mexico: Monterrey

SAMPLE SUMMARY

Workorder: 3053811 3RD QTR 2019-3076 RIVER RD

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
3053811001	3076 River Road, Conestoga, PA	Water	8/23/2019 14:25	8/23/2019 17:59	Mr. Brian G Shade

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Vancouver Waterloo · Winnipeg · Yellowknife **United States:** Cincinnati · Everett · Fort Collins · Holland · Houston · Middletown · Salt Lake City · Spring City · York **Mexico:** Monterrey

SAMPLE SUMMARY

Workorder: 3053811 3RD QTR 2019-3076 RIVER RD

Notes

- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 - Field Services Sampling Plan).
- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
- The Chain of Custody document is included as part of this report.
- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are performed in the laboratory and are therefore analyzed out of hold time.
- Method references listed on this report beginning with the prefix "S" followed by a method number (such as S2310B-97) refer to methods from "Standard Methods for the Examination of Water and Wastewater".
- For microbiological analyses, the "Prepared" value is the date/time into the incubator and the "Analyzed" value is the date/time out the incubator.
- An Analysis-Prep Method Cross Reference Table is included after Analytical Results & Qualifiers section in this report.

Standard Acronyms/Flags

J	Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
U	Indicates that the analyte was Not Detected (ND)
N	Indicates presumptive evidence of the presence of a compound
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RDL	Reporting Detection Limit
ND	Not Detected - indicates that the analyte was Not Detected at the RDL
Cntr	Analysis was performed using this container
RegLmt	Regulatory Limit
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
%Rec	Percent Recovery
RPD	Relative Percent Difference
LOD	DoD Limit of Detection
LOQ	DoD Limit of Quantitation
DL	DoD Detection Limit
I	Indicates reported value is greater than or equal to the Method Detection Limit (MDL) but less than the Report Detection Limit (RDL)
(S)	Surrogate Compound
NC	Not Calculated
*	Result outside of QC limits

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Vancouver Waterloo · Winnipeg · Yellowknife United States: Cincinnati · Everett · Fort Collins · Holland · Houston · Middletown · Salt Lake City · Spring City · York Mexico: Monterrey

ANALYTICAL RESULTS

Workorder: 3053811 3RD QTR 2019-3076 RIVER RD

 Lab ID: **3053811001** Date Collected: 8/23/2019 14:25 Matrix: Water
 Sample ID: **3076 River Road, Conestoga, PA** Date Received: 8/23/2019 17:59

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			8/30/19 01:34	VLM	K
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			8/30/19 01:34	VLM	K
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/30/19 01:34	VLM	K
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/30/19 01:34	VLM	K
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/30/19 01:34	VLM	K
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/30/19 01:34	VLM	K
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/30/19 01:34	VLM	K
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			8/30/19 01:34	VLM	K
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			8/30/19 01:34	VLM	K
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			8/30/19 01:34	VLM	K
Toluene	ND		ug/L	1.0	SW846 8260B			8/30/19 01:34	VLM	K
Total Xylenes	ND		ug/L	3.0	SW846 8260B			8/30/19 01:34	VLM	K
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			8/30/19 01:34	VLM	K
Trichloroethene	ND		ug/L	1.0	SW846 8260B			8/30/19 01:34	VLM	K
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			8/30/19 01:34	VLM	K
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			8/30/19 01:34	VLM	K
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	120		%	62 - 133	SW846 8260B			8/30/19 01:34	VLM	K
4-Bromofluorobenzene (S)	105		%	79 - 114	SW846 8260B			8/30/19 01:34	VLM	K
Dibromofluoromethane (S)	105		%	78 - 116	SW846 8260B			8/30/19 01:34	VLM	K
Toluene-d8 (S)	97		%	76 - 127	SW846 8260B			8/30/19 01:34	VLM	K
WET CHEMISTRY										
Alkalinity, Bicarbonate	7		mg/L	5	SM2320B-2011			8/28/19 14:03	MBW	C
Alkalinity, Total	7	1	mg/L	5	SM2320B-2011			8/28/19 14:03	MBW	C
Ammonia-N	0.185		mg/L	0.100	D6919-09			9/5/19 02:15	AK	B
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			8/30/19 18:22	AK	B
Chloride	57.1		mg/L	2.0	EPA 300.0			8/24/19 10:48	CHW	C
Fluoride	ND		mg/L	0.20	EPA 300.0			8/24/19 10:48	CHW	C
Halogen, Total Organic (TOX)	ND		ug/L	20.0	SW846 9020B			8/27/19 11:21	PAG	I
Nitrate-N	10.4		mg/L	0.20	EPA 300.0			8/24/19 10:48	CHW	C
Nitrite-N	ND		mg/L	0.20	EPA 300.0			8/24/19 10:48	CHW	C
pH	6.16	2	pH_Units		S4500HB-11			8/28/19 14:03	MBW	C
Phenolics	ND		mg/L	0.005	EPA 420.4	8/27/19 13:01	C_D	8/28/19 08:23	C_D	H
Specific Conductance	291		umhos/cm	1	SM2510B-2011			8/28/19 14:03	MBW	C

ALS Environmental Laboratory Locations Across North America

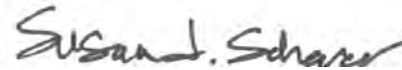
 Canada: Burlington · Calgary · Centre of Excellence · Edmonton · Fort McMurray · Fort St. John · Grande Prairie · London · Mississauga · Richmond Hill · Saskatoon · Thunder Bay
 Vancouver Waterloo · Winnipeg · Yellowknife United States: Cincinnati · Everett · Fort Collins · Holland · Houston · Middletown · Salt Lake City · Spring City · York Mexico: Monterrey

ANALYTICAL RESULTS

Workorder: 3053811 3RD QTR 2019-3076 RIVER RD

Lab ID: **3053811001** Date Collected: 8/23/2019 14:25 Matrix: Water
Sample ID: **3076 River Road, Conestoga, PA** Date Received: 8/23/2019 17:59

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Sulfate	12.7		mg/L	2.0	EPA 300.0			8/24/19 10:48	CHW	C
Total Dissolved Solids	188		mg/L	25	S2540C-11			8/29/19 14:05	D1C	C
Total Organic Carbon (TOC)	0.75		mg/L	0.50	SM5310B-2011			8/31/19 03:15	PAG	F
Turbidity	0.21		NTU	0.10	SM2130B-2011			8/24/19 06:00	R2B	C
METALS										
Calcium, Total	15.7		mg/L	0.050	EPA 200.7	8/28/19 13:05	SXC	8/29/19 11:32	MNP	D1
Calcium, Dissolved	16.7		mg/L	0.10	EPA 200.7	8/27/19 08:49	MNP	8/28/19 11:50	MNP	E
Iron, Total	0.033		mg/L	0.030	EPA 200.7	8/28/19 13:05	SXC	8/29/19 11:32	MNP	D1
Iron, Dissolved	ND		mg/L	0.060	EPA 200.7	8/27/19 08:49	MNP	8/28/19 11:50	MNP	E
Magnesium, Total	8.2		mg/L	0.050	EPA 200.7	8/28/19 13:05	SXC	8/29/19 11:32	MNP	D1
Magnesium, Dissolved	8.6		mg/L	0.10	EPA 200.7	8/27/19 08:49	MNP	8/28/19 11:50	MNP	E
Manganese, Total	0.19		mg/L	0.0025	EPA 200.7	8/28/19 13:05	SXC	8/29/19 11:32	MNP	D1
Manganese, Dissolved	0.20		mg/L	0.0050	EPA 200.7	8/27/19 08:49	MNP	8/28/19 11:50	MNP	E
Potassium, Total	3.4		mg/L	0.25	EPA 200.7	8/28/19 13:05	SXC	8/29/19 11:32	MNP	D1
Potassium, Dissolved	3.5		mg/L	0.50	EPA 200.7	8/27/19 08:49	MNP	8/28/19 11:50	MNP	E
Sodium, Total	24.6		mg/L	0.25	EPA 200.7	8/28/19 13:05	SXC	8/29/19 11:32	MNP	D1
Sodium, Dissolved	25.9		mg/L	0.50	EPA 200.7	8/27/19 08:49	MNP	8/28/19 11:50	MNP	E
FIELD PARAMETERS										
pH, Field (SM4500B)	6.11		pH_Units		Field			8/23/19 14:25	BGS	N
Specific Conductance, Field	288		umhos/cm	1	Field			8/23/19 14:25	BGS	N
Temperature	17.20		Deg. C		Field			8/23/19 14:25	BGS	N


Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3053811 3RD QTR 2019-3076 RIVER RD

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
3053811001	1	3076 River Road, Conestoga, PA	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3053811001	2	3076 River Road, Conestoga, PA	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				

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ANALYSIS - PREP METHOD CROSS REFERENCE TABLE

Workorder: 3053811 3RD QTR 2019-3076 RIVER RD

Lab ID	Sample ID	Analysis Method	Prep Method
3053811001	3076 River Road, Conestoga, PA	D6919-09	
3053811001	3076 River Road, Conestoga, PA	EPA 200.7	EPA ACID
3053811001	3076 River Road, Conestoga, PA	EPA 200.7	EPA TRMD
3053811001	3076 River Road, Conestoga, PA	EPA 300.0	
3053811001	3076 River Road, Conestoga, PA	EPA 410.4	
3053811001	3076 River Road, Conestoga, PA	EPA 420.4	420.4/9066
3053811001	3076 River Road, Conestoga, PA	Field	
3053811001	3076 River Road, Conestoga, PA	S2540C-11	
3053811001	3076 River Road, Conestoga, PA	S4500HB-11	
3053811001	3076 River Road, Conestoga, PA	SM2130B-2011	
3053811001	3076 River Road, Conestoga, PA	SM2320B-2011	
3053811001	3076 River Road, Conestoga, PA	SM2510B-2011	
3053811001	3076 River Road, Conestoga, PA	SM5310B-2011	
3053811001	3076 River Road, Conestoga, PA	SW846 8260B	
3053811001	3076 River Road, Conestoga, PA	SW846 9020B	

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34 Dogwood Lane • Middletown, PA 17057 • 717.344.5541 • Fax: 717.344.1430
 www.alsenv.com

**CHAIN OF CUSTODY/
REQUEST FOR ANALYSIS**

Generated by ALS

CO
ALS

1 of 1
* 3 0 5 3 8 1 1 *

ALL SHADED AREAS MUST BE COMPLETED BY THE CLIENT / SAMPLER. INSTRUCTIONS ON THE BACK.

Client Name: LCSWMA - Brian Sensenich
 Address: 3076 Rover Road
 Conestoga, PA 17516
 Contact: Brian Sensenich
 Phone#: (717) 676-5779
 Project Name#: LCSWMA - Quarterly
 Bill To: LCSWMA - Brian Sensenich

TAT Normal-Standard TAT is 10-12 business days.
 Rush-Subject to ALS approval and surcharges.
 Date Required: _____ Approved By: _____
 Email? -Y -N
 Fax? -Y -N

Container Type	AG	AN	AN	CG	PL	PL	PL	PL	PL
Container Size	40 ml	125 ml	250 ml	40 ml	250 ml	120 ml	120 ml	500 ml	500 ml
Preservative	HCl	H2SO4	H2SO4	HCl	H2SO4	HNO3	HNO3	None	None

ANALYSES/METHOD REQUESTED

Matrix	TOC	O-OH	TOX	SW846-8260 VOCs	FM	NH3-N, COD	Dissolved Metals: Ca, Fe, Mg, Mn, K, Na	Metals: Ca, Fe, Mg, Mn, K, Na	PH, TDS, NO2, NO3, Cl, SO4, F, Pb, Spc	Alkalinity, HCO3
G or C	2	1	2	23 X						1
DW				8/24/19						

Sample Description/Location (as it will appear on the lab report)	Sample Date	Time	Enter Number of Containers Per Sample or Field Results Below.																		
1 3076RIVERRD	08/23/19	1425	G	DW	2	1	2	23	X	1	1	1	1	1	1	1	1	1	1	1	
2																					
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					

Project Comments: _____

LOGGED BY (signature): _____

REVIEWED BY (signature): _____

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
Brian Sensenich ALS	8/23/19	1759	[Signature]	8/24/19	1759

ALS Field Services: Pickup Labor
 Composite Sampling Rental Equipment
 Other: _____

Special Processing: USACE Navy USACE

State Samples Collected In: NY NJ PA NC

Sample Disposal: Lab Special

Reportable to PADEP? Yes No PWSID # _____

EDDS: Format Type: _____

* G=Grab; C=Composite **Matrix - AL=Air; DW=Drinking Water; GW=Groundwater; OL=Oil; OL=Other Liquid; SL=Sludge; SO=Soil; WP=Wipe; WW=Wastewater

ALS ENVIRONMENTAL SHIPPING ADDRESS: 34 DOGWOOD LANE, MIDDLETOWN, PA 17057



301 Fulling Mill Road
 Middletown, PA 17057
 P: (717) 944-5541
 F: (717) 944-1430

Condition of Sample Receipt Form

Client: LCSWMA Work Order #: 3053811 Initials: qw Date: 9/24/19

- | | | | |
|--|---------------------------------------|--------------------------------------|-------------------------------------|
| 1. Were airbills / tracking numbers present and recorded?..... | <input checked="" type="radio"/> NONE | YES | NO |
| Tracking number: _____ | | | |
| 2. Are Custody Seals on shipping containers intact?..... | <input checked="" type="radio"/> NONE | YES | NO |
| 3. Are Custody Seals on sample containers intact?..... | <input checked="" type="radio"/> NONE | YES | NO |
| 4. Is there a COC (Chain-of-Custody) present?..... | <input checked="" type="radio"/> YES | YES | NO |
| 5. Are the COC and bottle labels complete, legible and in agreement?..... | <input checked="" type="radio"/> YES | YES | NO |
| 5a. Does the COC contain sample locations?..... | <input checked="" type="radio"/> YES | YES | NO |
| 5b. Does the COC contain date and time of sample collection for all samples?..... | <input checked="" type="radio"/> YES | YES | NO |
| 5c. Does the COC contain sample collectors name?..... | <input checked="" type="radio"/> YES | YES | NO |
| 5d. Does the COC note the type(s) of preservation for all bottles?..... | <input checked="" type="radio"/> YES | YES | NO |
| 5e. Does the COC note the number of bottles submitted for each sample?..... | <input checked="" type="radio"/> YES | YES | NO |
| 5f. Does the COC note the type of sample, composite or grab?..... | <input checked="" type="radio"/> YES | YES | NO |
| 5g. Does the COC note the matrix of the sample(s)?..... | <input checked="" type="radio"/> YES | YES | NO |
| 6. Are all aqueous samples requiring preservation preserved correctly? | N/A | <input checked="" type="radio"/> YES | NO |
| 7. Were all samples placed in the proper containers for the requested analyses, with sufficient volume?..... | <input checked="" type="radio"/> YES | YES | NO |
| 8. Are all samples within holding times for the requested analyses?..... | <input checked="" type="radio"/> YES | YES | NO |
| 9. Were all sample containers received intact and headspace free when required? (not broken, leaking, frozen, etc.)..... | <input checked="" type="radio"/> YES | YES | NO |
| 10. Did we receive trip blanks (applies only for methods EPA 504, EPA 524.2 and 1631E (LL Hg)?..... | <input checked="" type="radio"/> N/A | YES | NO |
| 11. Were the samples received on ice?..... | <input checked="" type="radio"/> YES | YES | NO |
| 12. Were sample temperatures measured at 0.0-6.0°C..... | <input checked="" type="radio"/> YES | YES | NO |
| 13. Are the samples DW matrix ? IF YES, fill out Reportable Drinking Water questions below..... | <input checked="" type="radio"/> YES | YES | NO |
| 13a. Are the samples required for SDWA compliance reporting?..... | N/A | YES | <input checked="" type="radio"/> NO |
| 13b. Did the client provide a SDWA PWS ID#?..... | <input checked="" type="radio"/> N/A | YES | NO |
| 13c. Are all aqueous unpreserved SDWA samples pH 5-9?..... | <input checked="" type="radio"/> N/A | YES | NO |
| 13d. Did the client provide the SDWA sample location ID/Description?..... | <input checked="" type="radio"/> N/A | YES | NO |
| 13e. Did the client provide the SDWA sample type (D, E, R, C, P, S)?..... | <input checked="" type="radio"/> N/A | YES | NO |

Cooler #: _____
 Temperature (°C): 3°C
 Thermometer ID: 403
 Radiological (µCi): _____

COMMENTS (Required for all NO responses above and any sample non-conformance):



September 8, 2019

Ms. Jordan Gallagher
Lancaster County Solid Waste Authority
1299 Hbg Pike, P.O. Box 4425
Lancaster, PA 17604

Certificate of Analysis

Project Name:	FREY FARM	Workorder:	3053817
Purchase Order:	PO1000126	Workorder ID:	3RD QTR 2019 3079 RIVER RD

Dear Ms. Gallagher:

Enclosed are the analytical results for samples received by the laboratory on Friday, August 23, 2019.

The ALS Environmental laboratory in Middletown, Pennsylvania is a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory and as such, certifies that all applicable test results meet the requirements of NELAP.

If you have any questions regarding this certificate of analysis, please contact Ms. Susan J Scherer (Project Coordinator) at (717) 944-5541.

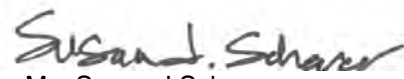
Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications section of the ALS website at www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads.

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ALS Spring City: 10 Riverside Drive, Spring City, PA 19475 610-948-4903

CC: Mr. Nicholas Rogers , Mr. Daniel Brown , Mr. Jeff Musser

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.


Ms. Susan J Scherer
Project Coordinator

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SAMPLE SUMMARY

Workorder: 3053817 3RD QTR 2019 3079 RIVER RD

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
3053817001	3079RIVERRD	Water	8/23/2019 16:02	8/23/2019 17:59	Mr. Brian G Shade

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SAMPLE SUMMARY

Workorder: 3053817 3RD QTR 2019 3079 RIVER RD

Notes

- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 - Field Services Sampling Plan).
- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
- The Chain of Custody document is included as part of this report.
- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are performed in the laboratory and are therefore analyzed out of hold time.
- Method references listed on this report beginning with the prefix "S" followed by a method number (such as S2310B-97) refer to methods from "Standard Methods for the Examination of Water and Wastewater".
- For microbiological analyses, the "Prepared" value is the date/time into the incubator and the "Analyzed" value is the date/time out the incubator.
- An Analysis-Prep Method Cross Reference Table is included after Analytical Results & Qualifiers section in this report.

Standard Acronyms/Flags

J	Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
U	Indicates that the analyte was Not Detected (ND)
N	Indicates presumptive evidence of the presence of a compound
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RDL	Reporting Detection Limit
ND	Not Detected - indicates that the analyte was Not Detected at the RDL
Cntr	Analysis was performed using this container
RegLmt	Regulatory Limit
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
%Rec	Percent Recovery
RPD	Relative Percent Difference
LOD	DoD Limit of Detection
LOQ	DoD Limit of Quantitation
DL	DoD Detection Limit
I	Indicates reported value is greater than or equal to the Method Detection Limit (MDL) but less than the Report Detection Limit (RDL)
(S)	Surrogate Compound
NC	Not Calculated
*	Result outside of QC limits

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ANALYTICAL RESULTS

Workorder: 3053817 3RD QTR 2019 3079 RIVER RD

Lab ID: **3053817001** Date Collected: 8/23/2019 16:02 Matrix: Water
Sample ID: **3079RIVERRD** Date Received: 8/23/2019 17:59

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			8/30/19 03:07	VLM	K
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			8/30/19 03:07	VLM	K
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/30/19 03:07	VLM	K
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/30/19 03:07	VLM	K
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/30/19 03:07	VLM	K
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/30/19 03:07	VLM	K
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/30/19 03:07	VLM	K
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			8/30/19 03:07	VLM	K
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			8/30/19 03:07	VLM	K
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			8/30/19 03:07	VLM	K
Toluene	ND		ug/L	1.0	SW846 8260B			8/30/19 03:07	VLM	K
Total Xylenes	ND		ug/L	3.0	SW846 8260B			8/30/19 03:07	VLM	K
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			8/30/19 03:07	VLM	K
Trichloroethene	ND		ug/L	1.0	SW846 8260B			8/30/19 03:07	VLM	K
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			8/30/19 03:07	VLM	K
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			8/30/19 03:07	VLM	K
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	120		%	62 - 133	SW846 8260B			8/30/19 03:07	VLM	K
4-Bromofluorobenzene (S)	106		%	79 - 114	SW846 8260B			8/30/19 03:07	VLM	K
Dibromofluoromethane (S)	105		%	78 - 116	SW846 8260B			8/30/19 03:07	VLM	K
Toluene-d8 (S)	98		%	76 - 127	SW846 8260B			8/30/19 03:07	VLM	K
WET CHEMISTRY										
Alkalinity, Bicarbonate	23		mg/L	5	SM2320B-2011			8/28/19 14:37	MBW	C
Alkalinity, Total	23	1	mg/L	5	SM2320B-2011			8/28/19 14:37	MBW	C
Ammonia-N	0.251		mg/L	0.100	D6919-09			9/4/19 14:09	AK	B
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			8/28/19 13:26	AK	B
Chloride	35.9		mg/L	2.0	EPA 300.0			8/24/19 07:10	CHW	C
Fluoride	ND		mg/L	0.20	EPA 300.0			8/24/19 07:10	CHW	C
Halogen, Total Organic (TOX)	ND		ug/L	20.0	SW846 9020B			8/28/19 12:51	PAG	I
Nitrate-N	ND		mg/L	0.20	EPA 300.0			8/24/19 07:10	CHW	C
Nitrite-N	ND		mg/L	0.20	EPA 300.0			8/24/19 07:10	CHW	C
pH	6.67	2	pH_Units		S4500HB-11			8/28/19 14:37	MBW	C
Phenolics	ND		mg/L	0.005	EPA 420.4	8/27/19 13:01	C_D	8/28/19 08:23	C_D	H
Specific Conductance	181		umhos/cm	1	SM2510B-2011			8/28/19 14:37	MBW	C

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ANALYTICAL RESULTS

Workorder: 3053817 3RD QTR 2019 3079 RIVER RD

Lab ID: **3053817001** Date Collected: 8/23/2019 16:02 Matrix: Water
 Sample ID: **3079RIVERRD** Date Received: 8/23/2019 17:59

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Sulfate	15.4		mg/L	2.0	EPA 300.0			8/24/19 07:10	CHW	C
Total Dissolved Solids	111		mg/L	25	S2540C-11			8/29/19 14:05	D1C	C
Total Organic Carbon (TOC)	ND		mg/L	0.50	SM5310B-2011			8/31/19 03:15	PAG	F
Turbidity	0.18		NTU	0.10	SM2130B-2011			8/24/19 06:00	R2B	C
METALS										
Calcium, Total	10		mg/L	0.050	EPA 200.7	8/29/19 14:30	SXC	8/30/19 11:50	MNP	D1
Calcium, Dissolved	9.9		mg/L	0.10	EPA 200.7	8/27/19 08:49	MNP	8/28/19 12:10	MNP	E
Iron, Total	ND		mg/L	0.030	EPA 200.7	8/29/19 14:30	SXC	8/30/19 11:50	MNP	D1
Iron, Dissolved	ND		mg/L	0.060	EPA 200.7	8/27/19 08:49	MNP	8/28/19 12:10	MNP	E
Magnesium, Total	5.4		mg/L	0.050	EPA 200.7	8/29/19 14:30	SXC	8/30/19 11:50	MNP	D1
Magnesium, Dissolved	5.5		mg/L	0.10	EPA 200.7	8/27/19 08:49	MNP	8/28/19 12:10	MNP	E
Manganese, Total	0.41		mg/L	0.0025	EPA 200.7	8/29/19 14:30	SXC	8/30/19 11:50	MNP	D1
Manganese, Dissolved	0.41		mg/L	0.0050	EPA 200.7	8/27/19 08:49	MNP	8/28/19 12:10	MNP	E
Potassium, Total	2.0		mg/L	0.25	EPA 200.7	8/29/19 14:30	SXC	8/30/19 11:50	MNP	D1
Potassium, Dissolved	2.1		mg/L	0.50	EPA 200.7	8/27/19 08:49	MNP	8/28/19 12:10	MNP	E
Sodium, Total	14.3		mg/L	0.25	EPA 200.7	8/29/19 14:30	SXC	8/30/19 11:50	MNP	D1
Sodium, Dissolved	14.5		mg/L	0.50	EPA 200.7	8/27/19 08:49	MNP	8/28/19 12:10	MNP	E
FIELD PARAMETERS										
pH, Field (SM4500B)	6.62		pH_Units		Field			8/23/19 16:02	BGS	N
Specific Conductance, Field	193		umhos/cm	1	Field			8/23/19 16:02	BGS	N
Temperature	17.20		Deg. C		Field			8/23/19 16:02	BGS	N

Susan J. Scherer
 Ms. Susan J Scherer
 Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3053817 3RD QTR 2019 3079 RIVER RD

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
3053817001	1	3079RIVERRD	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
3053817001	2	3079RIVERRD	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				

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ANALYSIS - PREP METHOD CROSS REFERENCE TABLE

Workorder: 3053817 3RD QTR 2019 3079 RIVER RD

Lab ID	Sample ID	Analysis Method	Prep Method
3053817001	3079RIVERRD	D6919-09	
3053817001	3079RIVERRD	EPA 200.7	EPA ACID
3053817001	3079RIVERRD	EPA 200.7	EPA TRMD
3053817001	3079RIVERRD	EPA 300.0	
3053817001	3079RIVERRD	EPA 410.4	
3053817001	3079RIVERRD	EPA 420.4	420.4/9066
3053817001	3079RIVERRD	Field	
3053817001	3079RIVERRD	S2540C-11	
3053817001	3079RIVERRD	S4500HB-11	
3053817001	3079RIVERRD	SM2130B-2011	
3053817001	3079RIVERRD	SM2320B-2011	
3053817001	3079RIVERRD	SM2510B-2011	
3053817001	3079RIVERRD	SM5310B-2011	
3053817001	3079RIVERRD	SW846 8260B	
3053817001	3079RIVERRD	SW846 9020B	

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 500 Pennsylvania • Middletown, PA 17057 • Phone: 717-944-5541 • Fax: 717-944-1430

**CHAIN OF CUSTODY/
REQUEST FOR ANALYSIS**
**ALL SHADED AREAS MUST BE COMPLETED BY THE CLIENT /
SAMPLER. INSTRUCTIONS ON THE BACK.**

Generated by ALS

COC
ALS

Client Name: Lancaster County Solid Waste MA
 Address: 1299 Harrisburg Pike, P.O. Box 4424
 Lancaster, PA 17604

Contact: Mark Reider

Phone#: (717) 735-0193

Project Name#: LCSWMA - Quarterly Fire Co.

Bill To: Lancaster County Solid Waste MA

TAT Normal-Standard TAT is 10-12 business days.

Rush-Subject to ALS approval and surcharges.

Date Required: _____ Approved By: _____

Email? -Y

Fax? -Y No.:

Sample Description/Location (as it will appear on the lab report)	Sample Date	Time	G or C	Matrix	TOC	O-OH	TOX	SW846-8260 VOCs	FM	NH3-N, COD	Dissolved Metals: Ca, Fe, Mg, Mn, K, Na	Metals: Ca, Fe, Mg, Mn, K, Na	pH, TDS, NO2, NO3, Cl, SO4, F, Pb, Spc	Alkalinity, HCO3
1 3079RIVERRD	08/23/19	1602	G DW		2	1	2	23	X	1	1	1	1	1
2														
3														
4														
5														
6														
7														
8														
9														
10														

Project Comments:

Relinquished By / Company Name: *ALS*

Date: 8/23/19

Time: 1602

Received By / Company Name: *ALS*

Date: 8/23/19

Time: 1759

LOGGED BY (signature):

REVIEWED BY (signature):

Receipt Information (completed by Receiving Lab)
 Cooler Temp: 42 Therm ID: 403
 No. of Coolers: Y N Initial

Custody Seals Present? (if present) Seals Intact? Received on Ice? COC Labels Completed/Accurate? Cont. in Good Cond.? Correct Containers? Correct Sample Volumes? Correct Preservation? Headspace/Volatiles?

Courier/Tracking #: _____
 Sample/COC Comments

ALS Field Services: Pickup Labor
 Composite_Sampling Rental_Equipment
 Other:

Special Processing: USACE Navy
 State Samples Collected In: NY NJ PA NC

Standard CLP-like USACE
 Reportable to PADEP? Yes No
 Lab Special
 PWSID # _____
 EDSS: Format Type: _____

**Matrix - A=Air; DW=Drinking Water; GW=Groundwater; OI=Oil; OL=Other Liquid; SL=Sludge; SO=Soil; WP=Wipe; WW=Wastewater
 * G=Grab; C=Composite
 ALS ENVIRONMENTAL SHIPPING ADDRESS: 34 DOGWOOD LANE, MIDDLETOWN, PA 17057



301 Fulling Mill Road
 Middletown, PA 17057
 P: (717) 944-5541
 F: (717) 944-1430

Condition of Sample Receipt Form

Client: LCSWMA Work Order #: 3053817 Initials: gn Date: 8/24/19

1. Were airbills / tracking numbers present and recorded?..... NONE YES NO
 Tracking number: _____
2. Are Custody Seals on shipping containers intact?..... NONE YES NO
3. Are Custody Seals on sample containers intact?..... NONE YES NO
4. Is there a COC (Chain-of-Custody) present?..... YES NO
5. Are the COC and bottle labels complete, legible and in agreement?..... YES NO
 - 5a. Does the COC contain sample locations?..... YES NO
 - 5b. Does the COC contain date and time of sample collection for all samples?..... YES NO
 - 5c. Does the COC contain sample collectors name?..... YES NO
 - 5d. Does the COC note the type(s) of preservation for all bottles?..... YES NO
 - 5e. Does the COC note the number of bottles submitted for each sample?..... YES NO
 - 5f. Does the COC note the type of sample, composite or grab?..... YES NO
 - 5g. Does the COC note the matrix of the sample(s)?..... YES NO
6. Are all aqueous samples requiring preservation preserved correctly?..... N/A YES NO
7. Were all samples placed in the proper containers for the requested analyses, with sufficient volume?..... YES NO
8. Are all samples within holding times for the requested analyses?..... YES NO
9. Were all sample containers received intact and headspace free when required? (not broken, leaking, frozen, etc.)..... YES NO
10. Did we receive trip blanks (applies only for methods EPA 504, EPA 524.2 and 1631E (LL Hg)?..... N/A YES NO
11. Were the samples received on ice?..... YES NO
12. Were sample temperatures measured at 0.0-6.0°C..... YES NO
13. Are the samples DW matrix ? If YES, fill out Reportable Drinking Water questions below..... YES NO
 - 13a. Are the samples required for SDWA compliance reporting?..... N/A YES NO
 - 13b. Did the client provide a SDWA PWS ID#?..... N/A YES NO
 - 13c. Are all aqueous unpreserved SDWA samples pH 5-9?..... N/A YES NO
 - 13d. Did the client provide the SDWA sample location ID/Description?..... N/A YES NO
 - 13e. Did the client provide the SDWA sample type (D, E, R, C, P, S)?..... N/A YES NO

Cooler #: _____

Temperature (°C): 4 _____

Thermometer ID: 403 _____

Radiological (µCi): _____

COMMENTS (Required for all NO responses above and any sample non-conformance):



September 8, 2019

Ms. Jordan Gallagher
Lancaster County Solid Waste Authority
1299 Hbg Pike, P.O. Box 4425
Lancaster, PA 17604

Certificate of Analysis

Project Name:	CONTIGUOUS LANDOWNER- 3088 RIVER RD	Workorder:	3053802
Purchase Order:	PO1000126	Workorder ID:	3rd QTR 2019-3088 RIVER RD

Dear Ms. Gallagher:

Enclosed are the analytical results for samples received by the laboratory on Friday, August 23, 2019.

The ALS Environmental laboratory in Middletown, Pennsylvania is a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory and as such, certifies that all applicable test results meet the requirements of NELAP.

If you have any questions regarding this certificate of analysis, please contact Ms. Susan J Scherer (Project Coordinator) at (717) 944-5541.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications section of the ALS website at www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads.

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ALS Spring City: 10 Riverside Drive, Spring City, PA 19475 610-948-4903

CC: Mr. Nicholas Rogers , Mr. Daniel Brown , Landowner , Mr. Jeff Musser

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.

Ms. Susan J Scherer
Project Coordinator

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SAMPLE SUMMARY

Workorder: 3053802 3rd QTR 2019-3088 RIVER RD

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
3053802001	3088 River Road, Conestoga PA	Water	8/23/2019 14:15	8/23/2019 17:59	Mr. Brian G Shade

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Vancouver Waterloo · Winnipeg · Yellowknife **United States:** Cincinnati · Everett · Fort Collins · Holland · Houston · Middletown · Salt Lake City · Spring City · York **Mexico:** Monterrey

SAMPLE SUMMARY

Workorder: 3053802 3rd QTR 2019-3088 RIVER RD

Notes

- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 - Field Services Sampling Plan).
- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
- The Chain of Custody document is included as part of this report.
- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are performed in the laboratory and are therefore analyzed out of hold time.
- Method references listed on this report beginning with the prefix "S" followed by a method number (such as S2310B-97) refer to methods from "Standard Methods for the Examination of Water and Wastewater".
- For microbiological analyses, the "Prepared" value is the date/time into the incubator and the "Analyzed" value is the date/time out the incubator.
- An Analysis-Prep Method Cross Reference Table is included after Analytical Results & Qualifiers section in this report.

Standard Acronyms/Flags

J	Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
U	Indicates that the analyte was Not Detected (ND)
N	Indicates presumptive evidence of the presence of a compound
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RDL	Reporting Detection Limit
ND	Not Detected - indicates that the analyte was Not Detected at the RDL
Cntr	Analysis was performed using this container
RegLmt	Regulatory Limit
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
%Rec	Percent Recovery
RPD	Relative Percent Difference
LOD	DoD Limit of Detection
LOQ	DoD Limit of Quantitation
DL	DoD Detection Limit
I	Indicates reported value is greater than or equal to the Method Detection Limit (MDL) but less than the Report Detection Limit (RDL)
(S)	Surrogate Compound
NC	Not Calculated
*	Result outside of QC limits

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ANALYTICAL RESULTS

Workorder: 3053802 3rd QTR 2019-3088 RIVER RD

Lab ID: **3053802001** Date Collected: 8/23/2019 14:15 Matrix: Water
Sample ID: **3088 River Road, Conestoga PA** Date Received: 8/23/2019 17:59

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			8/29/19 23:15	VLM	K
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			8/29/19 23:15	VLM	K
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/29/19 23:15	VLM	K
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/29/19 23:15	VLM	K
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/29/19 23:15	VLM	K
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/29/19 23:15	VLM	K
trans-1,2-Dichloroethene	ND	5	ug/L	1.0	SW846 8260B			8/29/19 23:15	VLM	K
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			8/29/19 23:15	VLM	K
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			8/29/19 23:15	VLM	K
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			8/29/19 23:15	VLM	K
Toluene	ND		ug/L	1.0	SW846 8260B			8/29/19 23:15	VLM	K
Total Xylenes	ND		ug/L	3.0	SW846 8260B			8/29/19 23:15	VLM	K
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			8/29/19 23:15	VLM	K
Trichloroethene	ND		ug/L	1.0	SW846 8260B			8/29/19 23:15	VLM	K
Trichlorofluoromethane	ND	3,4	ug/L	1.0	SW846 8260B			8/29/19 23:15	VLM	K
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			8/29/19 23:15	VLM	K
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	118		%	62 - 133	SW846 8260B			8/29/19 23:15	VLM	K
4-Bromofluorobenzene (S)	106		%	79 - 114	SW846 8260B			8/29/19 23:15	VLM	K
Dibromofluoromethane (S)	105		%	78 - 116	SW846 8260B			8/29/19 23:15	VLM	K
Toluene-d8 (S)	98		%	76 - 127	SW846 8260B			8/29/19 23:15	VLM	K
WET CHEMISTRY										
Alkalinity, Bicarbonate	150		mg/L	5	SM2320B-2011			8/28/19 12:38	MBW	C
Alkalinity, Total	150	1	mg/L	5	SM2320B-2011			8/28/19 12:38	MBW	C
Ammonia-N	0.229		mg/L	0.100	D6919-09			9/4/19 11:10	AK	B
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			8/28/19 13:26	AK	B
Chloride	235		mg/L	5.0	EPA 300.0			8/28/19 07:54	CHW	C
Fluoride	ND		mg/L	0.20	EPA 300.0			8/24/19 07:57	CHW	C
Halogen, Total Organic (TOX)	ND		ug/L	20.0	SW846 9020B			8/26/19 12:04	PAG	I
Nitrate-N	6.6		mg/L	0.20	EPA 300.0			8/24/19 07:57	CHW	C
Nitrite-N	ND		mg/L	0.20	EPA 300.0			8/24/19 07:57	CHW	C
pH	7.24	2	pH_Units		S4500HB-11			8/28/19 12:38	MBW	C
Phenolics	ND		mg/L	0.005	EPA 420.4	8/27/19 13:01	C_D	8/28/19 08:23	C_D	H
Specific Conductance	1090		umhos/cm	1	SM2510B-2011			8/28/19 12:38	MBW	C

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ANALYTICAL RESULTS

Workorder: 3053802 3rd QTR 2019-3088 RIVER RD

Lab ID: **3053802001** Date Collected: 8/23/2019 14:15 Matrix: Water
 Sample ID: **3088 River Road, Conestoga PA** Date Received: 8/23/2019 17:59

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Sulfate	ND		mg/L	2.0	EPA 300.0			8/24/19 07:57	CHW	C
Total Dissolved Solids	602		mg/L	25	S2540C-11			8/29/19 14:05	D1C	C
Total Organic Carbon (TOC)	ND		mg/L	0.50	SM5310B-2011			8/30/19 21:51	PAG	F
Turbidity	0.12		NTU	0.10	SM2130B-2011			8/24/19 06:00	R2B	C
METALS										
Calcium, Total	0.10		mg/L	0.050	EPA 200.7	8/28/19 13:05	SXC	8/29/19 11:45	MNP	D1
Calcium, Dissolved	ND		mg/L	0.10	EPA 200.7	8/27/19 08:49	MNP	8/28/19 11:30	MNP	E
Iron, Total	ND		mg/L	0.030	EPA 200.7	8/28/19 13:05	SXC	8/29/19 11:45	MNP	D1
Iron, Dissolved	ND		mg/L	0.060	EPA 200.7	8/27/19 08:49	MNP	8/28/19 11:30	MNP	E
Magnesium, Total	ND		mg/L	0.050	EPA 200.7	8/28/19 13:05	SXC	8/29/19 11:45	MNP	D1
Magnesium, Dissolved	ND		mg/L	0.10	EPA 200.7	8/27/19 08:49	MNP	8/28/19 11:30	MNP	E
Manganese, Total	ND		mg/L	0.0025	EPA 200.7	8/28/19 13:05	SXC	8/29/19 11:45	MNP	D1
Manganese, Dissolved	ND		mg/L	0.0050	EPA 200.7	8/27/19 08:49	MNP	8/28/19 11:30	MNP	E
Potassium, Total	2.0		mg/L	0.25	EPA 200.7	8/28/19 13:05	SXC	8/29/19 11:45	MNP	D1
Potassium, Dissolved	1.9		mg/L	0.50	EPA 200.7	8/27/19 08:49	MNP	8/28/19 11:30	MNP	E
Sodium, Total	198		mg/L	0.25	EPA 200.7	8/28/19 13:05	SXC	8/29/19 11:45	MNP	D1
Sodium, Dissolved	216		mg/L	0.50	EPA 200.7	8/27/19 08:49	MNP	8/28/19 11:30	MNP	E
FIELD PARAMETERS										
pH, Field (SM4500B)	7.19		pH_Units		Field			8/23/19 14:15	BGS	N
Specific Conductance, Field	1082		umhos/cm	1	Field			8/23/19 14:15	BGS	N
Temperature	19.10		Deg. C		Field			8/23/19 14:15	BGS	N

Susan J. Scherer
 Ms. Susan J Scherer
 Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3053802 3rd QTR 2019-3088 RIVER RD

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
3053802001	1	3088 River Road, Conestoga PA	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3053802001	2	3088 River Road, Conestoga PA	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
3053802001	3	3088 River Road, Conestoga PA	SW846 8260B	Trichlorofluoromethane
The QC sample type MS for method SW846 8260B was outside the control limits for the analyte Trichlorofluoromethane. The % Recovery was reported as 151 and the control limits were 38 to 123.				
3053802001	4	3088 River Road, Conestoga PA	SW846 8260B	Trichlorofluoromethane
The QC sample type MSD for method SW846 8260B was outside the control limits for the analyte Trichlorofluoromethane. The % Recovery was reported as 127 and the control limits were 38 to 123.				
3053802001	5	3088 River Road, Conestoga PA	SW846 8260B	trans-1,2-Dichloroethene
The QC sample type MS for method SW846 8260B was outside the control limits for the analyte trans-1,2-Dichloroethene. The % Recovery was reported as 131 and the control limits were 71 to 122.				

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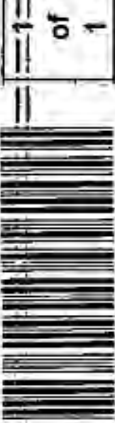
ANALYSIS - PREP METHOD CROSS REFERENCE TABLE

Workorder: 3053802 3rd QTR 2019-3088 RIVER RD

Lab ID	Sample ID	Analysis Method	Prep Method
3053802001	3088 River Road, Conestoga PA	D6919-09	
3053802001	3088 River Road, Conestoga PA	EPA 200.7	EPA ACID
3053802001	3088 River Road, Conestoga PA	EPA 200.7	EPA TRMD
3053802001	3088 River Road, Conestoga PA	EPA 300.0	
3053802001	3088 River Road, Conestoga PA	EPA 410.4	
3053802001	3088 River Road, Conestoga PA	EPA 420.4	420.4/9066
3053802001	3088 River Road, Conestoga PA	Field	
3053802001	3088 River Road, Conestoga PA	S2540C-11	
3053802001	3088 River Road, Conestoga PA	S4500HB-11	
3053802001	3088 River Road, Conestoga PA	SM2130B-2011	
3053802001	3088 River Road, Conestoga PA	SM2320B-2011	
3053802001	3088 River Road, Conestoga PA	SM2510B-2011	
3053802001	3088 River Road, Conestoga PA	SM5310B-2011	
3053802001	3088 River Road, Conestoga PA	SW846 8260B	
3053802001	3088 River Road, Conestoga PA	SW846 9020B	

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COI
ALS

CHAIN OF CUSTODY / REQUEST FOR ANALYSIS
ALL SHADED AREAS MUST BE COMPLETED BY THE CLIENT / SAMPLER. INSTRUCTIONS ON THE BACK.

34 Dogwood Lane • Middlestown, PA 17057 • Phone: 717-944-1430 • Fax: 717-944-1430
 Client Name: LCSWMA - Hans Weber and Deb Kalbach
 Address: 3088 River Road
 Conestoga, PA 17516
 Contact: Hans Weber and Deb Kalbach
 Phone#: (717) 419-7982
 Project Name#: LCSWMA - Quarry
 Bill To: LCSWMA - Hans Weber and Deb Kalbach

Receipt information (completed by receiving Lab)
 Cooler Temp: 7.2 Therm ID: 403
 No. of Coolers: Y N Initial

Custody Seals Present? (if present) Seals Intact? Received on Ice? COC/Labels Completed/Accurate? Cont. in Good Cond.? Correct Containers? Correct Sample Volumes? Correct Preservation? Headspace/Volatiles? Courier/Tracking #:
 Alkalinity, HCO3
 PH, TDS, NO2, NO3, Cl, SO4, F, Th, SPC
 Metals: Ca, Fe, Mg, Mn, K, Na
 Dissolved Metals: Ca, Fe, Mg, Mn, K, Na
 NH3-N, COD
 FM
 SW846-8260 VOCs
 TOX
 O-OH
 TOC

ALS Field Services: Pickup Labor
 Composite_Sampling Rental_Equipment
 Other:

Container Type	AG	AN	AN	CG	PL	PL	PL	PL	PL	PL	PL
40 ml	HCl	H2SO4	H2SO4	HCl	250 ml	120 ml	120 ml	120 ml	500 ml	500 ml	None
Preservative	HCl	H2SO4	H2SO4	HCl	H2SO4	HNO3	HNO3	HNO3	None	None	None

Enter Number of Containers Per Sample or Field Results Below.

Matrix	G or C	Time	Date	Sample
TOC	2	1	1	1
O-OH	1	2	2	1
TOX	2	2	2	1
FM	1	1	1	1
NH3-N, COD	1	1	1	1
Dissolved Metals: Ca, Fe, Mg, Mn, K, Na	1	1	1	1
Metals: Ca, Fe, Mg, Mn, K, Na	1	1	1	1
PH, TDS, NO2, NO3, Cl, SO4, F, Th, SPC	1	1	1	1
Alkalinity, HCO3	1	1	1	1

Special Processing
 USACE Navy
 State Samples Collected In NY NJ PA NC

Standard CLP-like USACE
 Reportable to PADEP? Yes No
 PWSID #
 - EDDS: Format Type

LOGGED BY (signature):
 RECEIVED BY (signature):

Date	Time	Received By / Company Name
8/23/19	1415	Hans Weber / LCSWMA
8/23/19	1759	Deb Kalbach / LCSWMA

Project Comments:
 Relinquished By / Company Name
 Date Time

Sample	Date	Time
1	08/23/19	1415
2		
3		
4		
5		
6		
7		
8		
9		



301 Fulling Mill Road
 Middletown, PA 17057
 P: (717) 944-5541
 F: (717) 944-1430

Condition of Sample Receipt Form

Client: LCSWMA Work Order #: 3033802 Initials: gn Date: 8/24/19

- | | | | |
|--|---------------------------------------|--------------------------------------|-------------------------------------|
| 1. Were airbills / tracking numbers present and recorded?..... | <input checked="" type="radio"/> NONE | YES | NO |
| Tracking number: _____ | | | |
| 2. Are Custody Seals on shipping containers intact?..... | <input checked="" type="radio"/> NONE | YES | NO |
| 3. Are Custody Seals on sample containers intact?..... | <input checked="" type="radio"/> NONE | YES | NO |
| 4. Is there a COC (Chain-of-Custody) present?..... | <input checked="" type="radio"/> YES | YES | NO |
| 5. Are the COC and bottle labels complete, legible and in agreement?..... | <input checked="" type="radio"/> YES | YES | NO |
| 5a. Does the COC contain sample locations?..... | <input checked="" type="radio"/> YES | YES | NO |
| 5b. Does the COC contain date and time of sample collection for all samples?..... | <input checked="" type="radio"/> YES | YES | NO |
| 5c. Does the COC contain sample collectors name?..... | <input checked="" type="radio"/> YES | YES | NO |
| 5d. Does the COC note the type(s) of preservation for all bottles?..... | <input checked="" type="radio"/> YES | YES | NO |
| 5e. Does the COC note the number of bottles submitted for each sample?..... | <input checked="" type="radio"/> YES | YES | NO |
| 5f. Does the COC note the type of sample, composite or grab?..... | <input checked="" type="radio"/> YES | YES | NO |
| 5g. Does the COC note the matrix of the sample(s)?..... | <input checked="" type="radio"/> YES | YES | NO |
| 6. Are all aqueous samples requiring preservation preserved correctly? | N/A | <input checked="" type="radio"/> YES | NO |
| 7. Were all samples placed in the proper containers for the requested analyses, with sufficient volume?..... | | <input checked="" type="radio"/> YES | NO |
| 8. Are all samples within holding times for the requested analyses?..... | | <input checked="" type="radio"/> YES | NO |
| 9. Were all sample containers received intact and headspace free when required? (not broken, leaking, frozen, etc.)..... | | <input checked="" type="radio"/> YES | NO |
| 10. Did we receive trip blanks (applies only for methods EPA 504, EPA 524.2 and 1631E (LL Hg)?..... | <input checked="" type="radio"/> N/A | YES | NO |
| 11. Were the samples received on ice?..... | | <input checked="" type="radio"/> YES | NO |
| 12. Were sample temperatures measured at 0.0-6.0°C <u>collected same day</u> | | YES | <input checked="" type="radio"/> NO |
| 13. Are the samples DW matrix ? If YES, fill out Reportable Drinking Water questions below..... | | <input checked="" type="radio"/> YES | NO |
| 13a. Are the samples required for SDWA compliance reporting?..... | N/A | YES | <input checked="" type="radio"/> NO |
| 13b. Did the client provide a SDWA PWS ID#?..... | <input checked="" type="radio"/> N/A | YES | NO |
| 13c. Are all aqueous unpreserved SDWA samples pH 5-9?..... | <input checked="" type="radio"/> N/A | YES | NO |
| 13d. Did the client provide the SDWA sample location ID/Description?..... | <input checked="" type="radio"/> N/A | YES | NO |
| 13e. Did the client provide the SDWA sample type (D, E, R, C, P, S)?..... | <input checked="" type="radio"/> N/A | YES | NO |

Cooler #: _____

Temperature (°C): 7 °C _____

Thermometer ID: 403 _____

Radiological (µCi): _____

COMMENTS (Required for all NO responses above and any sample non-conformance):

September 8, 2019

Ms. Jordan Gallagher
Lancaster County Solid Waste Authority
1299 Hbg Pike, P.O. Box 4425
Lancaster, PA 17604

Certificate of Analysis

Project Name:	CONTIGUOUS LANDOWNER- 3100 RIVER RD	Workorder:	3053812
Purchase Order:	PO1000126	Workorder ID:	3RD QTR 2019-3100 RIVER RD

Dear Ms. Gallagher:

Enclosed are the analytical results for samples received by the laboratory on Friday, August 23, 2019.

The ALS Environmental laboratory in Middletown, Pennsylvania is a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory and as such, certifies that all applicable test results meet the requirements of NELAP.

If you have any questions regarding this certificate of analysis, please contact Ms. Susan J Scherer (Project Coordinator) at (717) 944-5541.


Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications section of the ALS website at www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads.

This laboratory report may not be reproduced, except in full, without the written approval of ALS Environmental.

ALS Spring City: 10 Riverside Drive, Spring City, PA 19475 610-948-4903

CC: Mr. Nicholas Rogers , Mr. Daniel Brown , Landowner , Mr. Jeff Musser

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.

Ms. Susan J Scherer
Project Coordinator

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SAMPLE SUMMARY

Workorder: 3053812 3RD QTR 2019-3100 RIVER RD

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
3053812001	3100 River Road, Conestoga, PA	Water	8/23/2019 14:02	8/23/2019 17:59	Mr. Brian G Shade

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SAMPLE SUMMARY

Workorder: 3053812 3RD QTR 2019-3100 RIVER RD

Notes

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RegLmt	Regulatory Limit
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ANALYTICAL RESULTS

Workorder: 3053812 3RD QTR 2019-3100 RIVER RD

Lab ID: **3053812001** Date Collected: 8/23/2019 14:02 Matrix: Water
Sample ID: **3100 River Road, Conestoga, PA** Date Received: 8/23/2019 17:59

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			8/30/19 01:58	VLM	K
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			8/30/19 01:58	VLM	K
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/30/19 01:58	VLM	K
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/30/19 01:58	VLM	K
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/30/19 01:58	VLM	K
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/30/19 01:58	VLM	K
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/30/19 01:58	VLM	K
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			8/30/19 01:58	VLM	K
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			8/30/19 01:58	VLM	K
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			8/30/19 01:58	VLM	K
Toluene	ND		ug/L	1.0	SW846 8260B			8/30/19 01:58	VLM	K
Total Xylenes	ND		ug/L	3.0	SW846 8260B			8/30/19 01:58	VLM	K
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			8/30/19 01:58	VLM	K
Trichloroethene	ND		ug/L	1.0	SW846 8260B			8/30/19 01:58	VLM	K
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			8/30/19 01:58	VLM	K
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			8/30/19 01:58	VLM	K
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	118		%	62 - 133	SW846 8260B			8/30/19 01:58	VLM	K
4-Bromofluorobenzene (S)	106		%	79 - 114	SW846 8260B			8/30/19 01:58	VLM	K
Dibromofluoromethane (S)	104		%	78 - 116	SW846 8260B			8/30/19 01:58	VLM	K
Toluene-d8 (S)	97.4		%	76 - 127	SW846 8260B			8/30/19 01:58	VLM	K
WET CHEMISTRY										
Alkalinity, Bicarbonate	7		mg/L	5	SM2320B-2011			8/28/19 14:12	MBW	C
Alkalinity, Total	7	1	mg/L	5	SM2320B-2011			8/28/19 14:12	MBW	C
Ammonia-N	0.293		mg/L	0.100	D6919-09			9/5/19 02:28	AK	B
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			8/28/19 13:26	AK	B
Chloride	42.7		mg/L	2.0	EPA 300.0			8/24/19 11:04	CHW	C
Fluoride	ND		mg/L	0.20	EPA 300.0			8/24/19 11:04	CHW	C
Halogen, Total Organic (TOX)	ND		ug/L	20.0	SW846 9020B			8/27/19 11:40	PAG	I
Nitrate-N	4.9		mg/L	0.20	EPA 300.0			8/24/19 11:04	CHW	C
Nitrite-N	ND		mg/L	0.20	EPA 300.0			8/24/19 11:04	CHW	C
pH	6.18	2	pH_Units		S4500HB-11			8/28/19 14:12	MBW	C
Phenolics	ND		mg/L	0.005	EPA 420.4	8/27/19 13:01	C_D	8/28/19 08:23	C_D	H
Specific Conductance	212		umhos/cm	1	SM2510B-2011			8/28/19 14:12	MBW	C

ALS Environmental Laboratory Locations Across North America

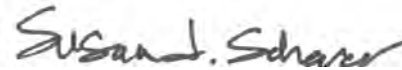
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ANALYTICAL RESULTS

Workorder: 3053812 3RD QTR 2019-3100 RIVER RD

Lab ID: **3053812001** Date Collected: 8/23/2019 14:02 Matrix: Water
Sample ID: **3100 River Road, Conestoga, PA** Date Received: 8/23/2019 17:59

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Sulfate	14.5		mg/L	2.0	EPA 300.0			8/24/19 11:04	CHW	C
Total Dissolved Solids	133		mg/L	25	S2540C-11			8/29/19 14:05	D1C	C
Total Organic Carbon (TOC)	ND		mg/L	0.50	SM5310B-2011			8/31/19 03:15	PAG	F
Turbidity	0.11		NTU	0.10	SM2130B-2011			8/24/19 06:00	R2B	C
METALS										
Calcium, Total	12.5		mg/L	0.050	EPA 200.7	8/28/19 13:05	SXC	8/29/19 11:52	MNP	D1
Calcium, Dissolved	13.0		mg/L	0.10	EPA 200.7	8/27/19 08:49	MNP	8/28/19 11:53	MNP	E
Iron, Total	ND		mg/L	0.030	EPA 200.7	8/28/19 13:05	SXC	8/29/19 11:52	MNP	D1
Iron, Dissolved	ND		mg/L	0.060	EPA 200.7	8/27/19 08:49	MNP	8/28/19 11:53	MNP	E
Magnesium, Total	6.1		mg/L	0.050	EPA 200.7	8/28/19 13:05	SXC	8/29/19 11:52	MNP	D1
Magnesium, Dissolved	6.2		mg/L	0.10	EPA 200.7	8/27/19 08:49	MNP	8/28/19 11:53	MNP	E
Manganese, Total	0.012		mg/L	0.0025	EPA 200.7	8/28/19 13:05	SXC	8/29/19 11:52	MNP	D1
Manganese, Dissolved	0.012		mg/L	0.0050	EPA 200.7	8/27/19 08:49	MNP	8/28/19 11:53	MNP	E
Potassium, Total	1.5		mg/L	0.25	EPA 200.7	8/28/19 13:05	SXC	8/29/19 11:52	MNP	D1
Potassium, Dissolved	1.5		mg/L	0.50	EPA 200.7	8/27/19 08:49	MNP	8/28/19 11:53	MNP	E
Sodium, Total	17.1		mg/L	0.25	EPA 200.7	8/28/19 13:05	SXC	8/29/19 11:52	MNP	D1
Sodium, Dissolved	18.4		mg/L	0.50	EPA 200.7	8/27/19 08:49	MNP	8/28/19 11:53	MNP	E
FIELD PARAMETERS										
pH, Field (SM4500B)	6.09		pH_Units		Field			8/23/19 14:02	BGS	N
Specific Conductance, Field	200		umhos/cm	1	Field			8/23/19 14:02	BGS	N
Temperature	17.80		Deg. C		Field			8/23/19 14:02	BGS	N


Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3053812 3RD QTR 2019-3100 RIVER RD

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
3053812001	1	3100 River Road, Conestoga, PA	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
3053812001	2	3100 River Road, Conestoga, PA	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				

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ANALYSIS - PREP METHOD CROSS REFERENCE TABLE

Workorder: 3053812 3RD QTR 2019-3100 RIVER RD

Lab ID	Sample ID	Analysis Method	Prep Method
3053812001	3100 River Road, Conestoga, PA	D6919-09	
3053812001	3100 River Road, Conestoga, PA	EPA 200.7	EPA ACID
3053812001	3100 River Road, Conestoga, PA	EPA 200.7	EPA TRMD
3053812001	3100 River Road, Conestoga, PA	EPA 300.0	
3053812001	3100 River Road, Conestoga, PA	EPA 410.4	
3053812001	3100 River Road, Conestoga, PA	EPA 420.4	420.4/9066
3053812001	3100 River Road, Conestoga, PA	Field	
3053812001	3100 River Road, Conestoga, PA	S2540C-11	
3053812001	3100 River Road, Conestoga, PA	S4500HB-11	
3053812001	3100 River Road, Conestoga, PA	SM2130B-2011	
3053812001	3100 River Road, Conestoga, PA	SM2320B-2011	
3053812001	3100 River Road, Conestoga, PA	SM2510B-2011	
3053812001	3100 River Road, Conestoga, PA	SM5310B-2011	
3053812001	3100 River Road, Conestoga, PA	SW846 8260B	
3053812001	3100 River Road, Conestoga, PA	SW846 9020B	

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CHAIN OF CUSTODY / REQUEST FOR ANALYSIS
ALL SHADED AREAS MUST BE COMPLETED BY THE CLIENT / SAMPLER. INSTRUCTIONS ON THE BACK.

COC #: **ALS Q1**
 1 of 1
 * 3 0 5 3 8 1 2 *

34 Dogwood Lane • Middletown, PA 17057 • Fax: 717-944-5541 • Fax: 717-944-1430

Client Name: LCSWMA - Larry Kirchner
 Address: 3100 River Road
 Conestoga, PA 17516

Contact: Larry Kirchner
 Phone#: (717) 594-0030
 Project Name#: LCSWMA - Quarterly
 Bill To: Lancaster County Solid Waste MA

TAT Normal-Standard TAT is 10-12 business days.
 Rush-Subject to ALS approval and surcharges.
 Date Required: _____ Approved By: _____
 Email? -Y -N
 Fax? -Y No: _____

Container Type	AG	AN	AN	CG	PL	PL	PL	PL	PL	PL	PL
Container Size	40 ml	125 ml	250 ml	40 ml	250 ml	120 ml	120 ml	120 ml	500 ml	500 ml	500 ml
Preservation	HCl	H2SO4	H2SO4	HCl	H2SO4	HNO3	HNO3	HNO3	None	None	None
Matrix	TOC	O-OH	TOX	SW846-8260 VOCs	FM	NH3-N, COD	Dissolved Metals: Ca, Fe, Mg, Mn, K, Na	Metals: Ca, Fe, Mg, Mn, K, Na	pH, TDS, NO2, NO3, Cl, SO4, F, Td, SpC	Alkalinity, HCO3	

Sample Description/Location	Sample Date	Time	Enter Number of Containers Per Sample or Field Results Below.	ALS Field Services:
1 3100RIVERRD	08/23/19	1402	G DW 2 1 2 23 X	<input type="checkbox"/> Pickup <input type="checkbox"/> Labor
2				<input type="checkbox"/> Composite_Sampling <input type="checkbox"/> Rental_Equipment
3				<input type="checkbox"/> Other:
4				
5				
6				
7				
8				
9				
10				

Project Comments: _____

LOGGED BY (signature): _____

REVIEWED BY (signature): _____

Relinquished By / Company Name: *Larry Kirchner ALS*

Date: *8/23/19* Time: *1759*

Received By / Company Name: _____

Standard CLP-like USACE

Special Processing: USACE Navy

State Samples Collected In: NY NJ PA NC

Reportable to PADEP? Yes No

Sample Disposal: Lab Special

PWSID # _____

- EDDS: Form# _____

* G=Grab; C=Composite **Matrix - AL=Air; DW=Drinking Water; GW=Groundwater; Oil=Oil; OL=Other Liquid; SL=Sludge; SO=Soil; WP=Wipe; WW=Wastewater
 ALS ENVIRONMENTAL SHIPPING ADDRESS: 34 DOGWOOD LANE, MIDDLETOWN, PA 17057
 Rev 8/04



301 Fulling Mill Road
 Middletown, PA 17057
 P: (717) 944-5541
 F: (717) 944-1430

Condition of Sample Receipt Form

Client: LCSWMA Work Order #: 3053812 Initials: gn Date: 8/24/19

1. Were airbills / tracking numbers present and recorded?.....	<input checked="" type="radio"/> NONE	YES	NO
Tracking number: _____			
2. Are Custody Seals on shipping containers intact?.....	<input checked="" type="radio"/> NONE	YES	NO
3. Are Custody Seals on sample containers intact?.....	<input checked="" type="radio"/> NONE	YES	NO
4. Is there a COC (Chain-of-Custody) present?.....	<input checked="" type="radio"/> YES	YES	NO
5. Are the COC and bottle labels complete, legible and in agreement?.....	<input checked="" type="radio"/> YES	YES	NO
5a. Does the COC contain sample locations?.....	<input checked="" type="radio"/> YES	YES	NO
5b. Does the COC contain date and time of sample collection for all samples?.....	<input checked="" type="radio"/> YES	YES	NO
5c. Does the COC contain sample collectors name?.....	<input checked="" type="radio"/> YES	YES	NO
5d. Does the COC note the type(s) of preservation for all bottles?.....	<input checked="" type="radio"/> YES	YES	NO
5e. Does the COC note the number of bottles submitted for each sample?.....	<input checked="" type="radio"/> YES	YES	NO
5f. Does the COC note the type of sample, composite or grab?.....	<input checked="" type="radio"/> YES	YES	NO
5g. Does the COC note the matrix of the sample(s)?.....	<input checked="" type="radio"/> YES	YES	NO
6. Are all aqueous samples requiring preservation preserved correctly?	N/A	<input checked="" type="radio"/> YES	NO
7. Were all samples placed in the proper containers for the requested analyses, with sufficient volume?.....	<input checked="" type="radio"/> YES	YES	NO
8. Are all samples within holding times for the requested analyses?.....	<input checked="" type="radio"/> YES	YES	NO
9. Were all sample containers received intact and headspace free when required? (not broken, leaking, frozen, etc.).....	<input checked="" type="radio"/> YES	YES	NO
10. Did we receive trip blanks (applies only for methods EPA 504, EPA 524.2 and 1631E (LL Hg)?.....	<input checked="" type="radio"/> N/A	YES	NO
11. Were the samples received on ice?.....	<input checked="" type="radio"/> YES	YES	NO
12. Were sample temperatures measured at 0.0-6.0°C.....	<input checked="" type="radio"/> YES	YES	NO
13. Are the samples DW matrix ? If YES, fill out Reportable Drinking Water questions below.....	<input checked="" type="radio"/> YES	YES	NO
13a. Are the samples required for SDWA compliance reporting?.....	N/A	YES	<input checked="" type="radio"/> NO
13b. Did the client provide a SDWA PWS ID#?.....	<input checked="" type="radio"/> N/A	YES	NO
13c. Are all aqueous unpreserved SDWA samples pH 5-9?.....	<input checked="" type="radio"/> N/A	YES	NO
13d. Did the client provide the SDWA sample location ID/Description?.....	<input checked="" type="radio"/> N/A	YES	NO
13e. Did the client provide the SDWA sample type (D, E, R, C, P, S)?.....	<input checked="" type="radio"/> N/A	YES	NO

Cooler #: _____

Temperature (°C): 4°C

Thermometer ID: 403

Radiological (µCi): _____

COMMENTS (Required for all NO responses above and any sample non-conformance):



September 3, 2019

Mr. Daniel Brown
Lancaster County Solid Waste Authority
1299 Hbg Pike, P.O. Box 4425
Lancaster, PA 17604

Certificate of Analysis

Project Name:	CONTIGUOUS LANDOWNER- 3106 RIVER RD	Workorder:	3053829
Purchase Order:	PO1000126	Workorder ID:	3RD QTR 2019-3106 RIVER RD

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Friday, August 23, 2019.

The ALS Environmental laboratory in Middletown, Pennsylvania is a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory and as such, certifies that all applicable test results meet the requirements of NELAP.

If you have any questions regarding this certificate of analysis, please contact Ms. Susan J Scherer (Project Coordinator) at (717) 944-5541.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications section of the ALS website at www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads.

This laboratory report may not be reproduced, except in full, without the written approval of ALS Environmental.

ALS Spring City: 10 Riverside Drive, Spring City, PA 19475 610-948-4903

CC: Mr. Nicholas Rogers , Ms. Jordan Gallagher , Landowner , Mr. Jeff Musser

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.

Ms. Susan J Scherer
Project Coordinator

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SAMPLE SUMMARY

Workorder: 3053829 3RD QTR 2019-3106 RIVER RD

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
3053829001	3106 River Road, Conestoga, PA	Water	8/23/2019 13:54	8/23/2019 17:59	Mr. Brian G Shade

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SAMPLE SUMMARY

Workorder: 3053829 3RD QTR 2019-3106 RIVER RD

Notes

- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 - Field Services Sampling Plan).
- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
- The Chain of Custody document is included as part of this report.
- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are performed in the laboratory and are therefore analyzed out of hold time.
- Method references listed on this report beginning with the prefix "S" followed by a method number (such as S2310B-97) refer to methods from "Standard Methods for the Examination of Water and Wastewater".
- For microbiological analyses, the "Prepared" value is the date/time into the incubator and the "Analyzed" value is the date/time out the incubator.
- An Analysis-Prep Method Cross Reference Table is included after Analytical Results & Qualifiers section in this report.

Standard Acronyms/Flags

J	Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
U	Indicates that the analyte was Not Detected (ND)
N	Indicates presumptive evidence of the presence of a compound
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RDL	Reporting Detection Limit
ND	Not Detected - indicates that the analyte was Not Detected at the RDL
Cntr	Analysis was performed using this container
RegLmt	Regulatory Limit
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
%Rec	Percent Recovery
RPD	Relative Percent Difference
LOD	DoD Limit of Detection
LOQ	DoD Limit of Quantitation
DL	DoD Detection Limit
I	Indicates reported value is greater than or equal to the Method Detection Limit (MDL) but less than the Report Detection Limit (RDL)
(S)	Surrogate Compound
NC	Not Calculated
*	Result outside of QC limits

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ANALYTICAL RESULTS

Workorder: 3053829 3RD QTR 2019-3106 RIVER RD

 Lab ID: **3053829001** Date Collected: 8/23/2019 13:54 Matrix: Water
 Sample ID: **3106 River Road, Conestoga, PA** Date Received: 8/23/2019 17:59

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
WET CHEMISTRY										
Alkalinity, Bicarbonate	11		mg/L	5	SM2320B-2011			8/29/19 07:17	MBW	C
Alkalinity, Total	11	1	mg/L	5	SM2320B-2011			8/29/19 07:17	MBW	C
Ammonia-N	ND		mg/L	0.100	D6919-09			8/29/19 20:24	AK	B
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			8/28/19 13:26	AK	B
Chloride	137		mg/L	2.0	EPA 300.0			8/24/19 13:55	CHW	C
Fluoride	ND		mg/L	0.20	EPA 300.0			8/24/19 13:55	CHW	C
Halogen, Total Organic (TOX)	ND		ug/L	20.0	SW846 9020B			8/29/19 12:23	PAG	I
Nitrate-N	13.2		mg/L	0.20	EPA 300.0			8/24/19 13:55	CHW	C
Nitrite-N	ND		mg/L	0.20	EPA 300.0			8/24/19 13:55	CHW	C
pH	5.96	2	pH_Units		S4500HB-11			8/29/19 07:17	MBW	C
Phenolics	ND		mg/L	0.005	EPA 420.4	8/27/19 13:01	C_D	8/28/19 08:23	C_D	H
Specific Conductance	546		umhos/cm	1	SM2510B-2011			8/29/19 07:17	MBW	C
Sulfate	8.5		mg/L	2.0	EPA 300.0			8/24/19 13:55	CHW	C
Total Dissolved Solids	347		mg/L	25	S2540C-11			8/29/19 15:32	D1C	C
Total Organic Carbon (TOC)	0.68		mg/L	0.50	SM5310B-2011			8/31/19 09:03	PAG	F
Turbidity	0.18		NTU	0.10	SM2130B-2011			8/24/19 06:00	R2B	C
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			8/30/19 05:27	VLM	K
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			8/30/19 05:27	VLM	K
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/30/19 05:27	VLM	K
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/30/19 05:27	VLM	K
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/30/19 05:27	VLM	K
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/30/19 05:27	VLM	K
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/30/19 05:27	VLM	K
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			8/30/19 05:27	VLM	K
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			8/30/19 05:27	VLM	K
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			8/30/19 05:27	VLM	K
Toluene	ND		ug/L	1.0	SW846 8260B			8/30/19 05:27	VLM	K
Total Xylenes	ND		ug/L	3.0	SW846 8260B			8/30/19 05:27	VLM	K
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			8/30/19 05:27	VLM	K
Trichloroethene	ND		ug/L	1.0	SW846 8260B			8/30/19 05:27	VLM	K
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			8/30/19 05:27	VLM	K
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			8/30/19 05:27	VLM	K
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>

ALS Environmental Laboratory Locations Across North America

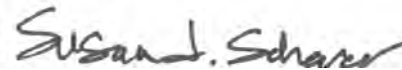
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ANALYTICAL RESULTS

Workorder: 3053829 3RD QTR 2019-3106 RIVER RD

 Lab ID: **3053829001** Date Collected: 8/23/2019 13:54 Matrix: Water
 Sample ID: **3106 River Road, Conestoga, PA** Date Received: 8/23/2019 17:59

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
1,2-Dichloroethane-d4 (S)	120		%	62 - 133	SW846 8260B			8/30/19 05:27	VLM	K
4-Bromofluorobenzene (S)	105		%	79 - 114	SW846 8260B			8/30/19 05:27	VLM	K
Dibromofluoromethane (S)	103		%	78 - 116	SW846 8260B			8/30/19 05:27	VLM	K
Toluene-d8 (S)	97.3		%	76 - 127	SW846 8260B			8/30/19 05:27	VLM	K
METALS										
Calcium, Total	21.3		mg/L	0.050	EPA 200.7	8/29/19 14:30	SXC	8/30/19 11:40	MNP	D1
Calcium, Dissolved	22.9		mg/L	0.10	EPA 200.7	8/27/19 08:50	MNP	8/28/19 12:30	MNP	E
Iron, Total	0.14		mg/L	0.030	EPA 200.7	8/29/19 14:30	SXC	8/30/19 11:40	MNP	D1
Iron, Dissolved	ND		mg/L	0.060	EPA 200.7	8/27/19 08:50	MNP	8/28/19 12:30	MNP	E
Magnesium, Total	14.7		mg/L	0.050	EPA 200.7	8/29/19 14:30	SXC	8/30/19 11:40	MNP	D1
Magnesium, Dissolved	15.9		mg/L	0.10	EPA 200.7	8/27/19 08:50	MNP	8/28/19 12:30	MNP	E
Manganese, Total	0.092		mg/L	0.0025	EPA 200.7	8/29/19 14:30	SXC	8/30/19 11:40	MNP	D1
Manganese, Dissolved	0.090		mg/L	0.0050	EPA 200.7	8/27/19 08:50	MNP	8/28/19 12:30	MNP	E
Potassium, Total	2.0		mg/L	0.25	EPA 200.7	8/29/19 14:30	SXC	8/30/19 11:40	MNP	D1
Potassium, Dissolved	2.0		mg/L	0.50	EPA 200.7	8/27/19 08:50	MNP	8/28/19 12:30	MNP	E
Sodium, Total	54.5		mg/L	0.25	EPA 200.7	8/29/19 14:30	SXC	8/30/19 11:40	MNP	D1
Sodium, Dissolved	56.5		mg/L	0.50	EPA 200.7	8/27/19 08:50	MNP	8/28/19 12:30	MNP	E
FIELD PARAMETERS										
pH, Field (SM4500B)	6.02		pH_Units		Field			8/23/19 13:54	BGS	N
Specific Conductance, Field	552		umhos/cm	1	Field			8/23/19 13:54	BGS	N
Temperature	17.20		Deg. C		Field			8/23/19 13:54	BGS	N


 Ms. Susan J Scherer
 Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3053829 3RD QTR 2019-3106 RIVER RD

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
3053829001	1	3106 River Road, Conestoga, PA	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3053829001	2	3106 River Road, Conestoga, PA	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				

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ANALYSIS - PREP METHOD CROSS REFERENCE TABLE

Workorder: 3053829 3RD QTR 2019-3106 RIVER RD

Lab ID	Sample ID	Analysis Method	Prep Method
3053829001	3106 River Road, Conestoga, PA	D6919-09	
3053829001	3106 River Road, Conestoga, PA	EPA 200.7	EPA ACID
3053829001	3106 River Road, Conestoga, PA	EPA 200.7	EPA TRMD
3053829001	3106 River Road, Conestoga, PA	EPA 300.0	
3053829001	3106 River Road, Conestoga, PA	EPA 410.4	
3053829001	3106 River Road, Conestoga, PA	EPA 420.4	420.4/9066
3053829001	3106 River Road, Conestoga, PA	Field	
3053829001	3106 River Road, Conestoga, PA	S2540C-11	
3053829001	3106 River Road, Conestoga, PA	S4500HB-11	
3053829001	3106 River Road, Conestoga, PA	SM2130B-2011	
3053829001	3106 River Road, Conestoga, PA	SM2320B-2011	
3053829001	3106 River Road, Conestoga, PA	SM2510B-2011	
3053829001	3106 River Road, Conestoga, PA	SM5310B-2011	
3053829001	3106 River Road, Conestoga, PA	SW846 8260B	
3053829001	3106 River Road, Conestoga, PA	SW846 9020B	

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COC
 ALS

Generated by ALS

CHAIN OF CUSTODY / REQUEST FOR ANALYSIS
ALL SHADED AREAS MUST BE COMPLETED BY THE CLIENT / SAMPLER. INSTRUCTIONS ON THE BACK.

ALS Environmental
 34 Dogwood Lane • Middletown, PA 17057 • Fax: 717-944-5541 • Fax: 717-944-1430
 Client Name: LCSWMA - Aaron Fry
 Address: 3106 River Road
 Conestoga, PA 17516
 Contact: Aaron Fry
 Phone#: (717) 669-6831
 Project Name#: LCSWMA - Quarterly
 Bill To: LCSWMA - Aaron Fry

Cooler Temp: 10 Therm ID: 403
 No. of Coolers: Y N Initial
 Custody Seals Present?
 (If present) Seals Intact?
 Received on Ice?
 COC Labels Complete/Accurate?
 Cont. in Good Cond.?
 Correct Containers?
 Correct Sample Volumes?
 Correct Preservation?
 Headspace/Volatiles?

Container Type	AG	AN	AN	AN	CG	PL	PL	PL	PL	PL	PL
40 ml	40 ml	250 ml	250 ml	250 ml	40 ml	120 ml	120 ml	120 ml	500 ml	500 ml	500 ml
Preservative	HCl	H2SO4	H2SO4	HCl	HCl	HNO3	HNO3	HNO3	None	None	None

ANALYSES/METHOD REQUESTED

Matrix	TOC	O-OH	TOX	TM	NH3-N, COD	Dissolved Metals: Ca, Fe, Mg, Mn, K, Na	Metals: Ca, Fe, Mg, Mn, K, Na	Pb, TDS, NO2, NO3, Cl, SO4, F, Pb, Spc	Alkalinity, HCO3
G or C	2	1	2	1	1	1	1	1	1

Enter Number of Containers Per Sample or Field Results Below.

Courier/Tracking #:
 Sample/COC Comments:
 ALS Field Services: Pickup Labor
 Composite Sampling Rental Equipment
 Other:

Standard	Deliverables	Data	Special Processing	State Samples Collected In
<input type="checkbox"/> Standard	<input type="checkbox"/> CLP-like	<input type="checkbox"/> USACE	USACE <input type="checkbox"/> Navy <input type="checkbox"/>	NY <input type="checkbox"/> NJ <input type="checkbox"/> PA <input checked="" type="checkbox"/> NC <input type="checkbox"/>

Project Comments:
 Relinquished By / Company Name: *ALS*
 Date: 8/23/19
 Time: 1354
 Received By / Company Name: *ALS*
 Date: 8/23/19
 Time: 1759



301 Fulling Mill Road
 Middletown, PA 17057
 P: (717) 944-5541
 F: (717) 944-1430

Condition of Sample Receipt Form

Client: LCSWMA Work Order #: 3053829 Initials: gn Date: 8/24/19

- | | | | |
|--|---------------------------------------|--------------------------------------|-------------------------------------|
| 1. Were airbills / tracking numbers present and recorded?..... | <input checked="" type="radio"/> NONE | YES | NO |
| Tracking number: _____ | | | |
| 2. Are Custody Seals on shipping containers intact?..... | <input checked="" type="radio"/> NONE | YES | NO |
| 3. Are Custody Seals on sample containers intact?..... | <input checked="" type="radio"/> NONE | YES | NO |
| 4. Is there a COC (Chain-of-Custody) present?..... | <input checked="" type="radio"/> YES | YES | NO |
| 5. Are the COC and bottle labels complete, legible and in agreement?..... | <input checked="" type="radio"/> YES | YES | NO |
| 5a. Does the COC contain sample locations?..... | <input checked="" type="radio"/> YES | YES | NO |
| 5b. Does the COC contain date and time of sample collection for all samples?..... | <input checked="" type="radio"/> YES | YES | NO |
| 5c. Does the COC contain sample collectors name?..... | <input checked="" type="radio"/> YES | YES | NO |
| 5d. Does the COC note the type(s) of preservation for all bottles?..... | <input checked="" type="radio"/> YES | YES | NO |
| 5e. Does the COC note the number of bottles submitted for each sample?..... | <input checked="" type="radio"/> YES | YES | NO |
| 5f. Does the COC note the type of sample, composite or grab?..... | <input checked="" type="radio"/> YES | YES | NO |
| 5g. Does the COC note the matrix of the sample(s)?..... | <input checked="" type="radio"/> YES | YES | NO |
| 6. Are all aqueous samples requiring preservation preserved correctly? | N/A | <input checked="" type="radio"/> YES | NO |
| 7. Were all samples placed in the proper containers for the requested analyses, with sufficient volume?..... | <input checked="" type="radio"/> YES | YES | NO |
| 8. Are all samples within holding times for the requested analyses?..... | <input checked="" type="radio"/> YES | YES | NO |
| 9. Were all sample containers received intact and headspace free when required? (not broken, leaking, frozen, etc.)..... | <input checked="" type="radio"/> YES | YES | NO |
| 10. Did we receive trip blanks (applies only for methods EPA 504, EPA 524.2 and 1631E (LL Hg)?..... | <input checked="" type="radio"/> N/A | YES | NO |
| 11. Were the samples received on ice?..... | <input checked="" type="radio"/> YES | YES | NO |
| 12. Were sample temperatures measured at 0.0-6.0°C... <u>collected same day</u> | <input checked="" type="radio"/> YES | YES | <input checked="" type="radio"/> NO |
| 13. Are the samples DW matrix ? If YES, fill out Reportable Drinking Water questions below..... | <input checked="" type="radio"/> YES | YES | NO |
| 13a. Are the samples required for SDWA compliance reporting?..... | N/A | YES | <input checked="" type="radio"/> NO |
| 13b. Did the client provide a SDWA PWS ID#?..... | <input checked="" type="radio"/> N/A | YES | NO |
| 13c. Are all aqueous unpreserved SDWA samples pH 5-9?..... | <input checked="" type="radio"/> N/A | YES | NO |
| 13d. Did the client provide the SDWA sample location ID/Description?..... | <input checked="" type="radio"/> N/A | YES | NO |
| 13e. Did the client provide the SDWA sample type (D, E, R, C, P, S)?..... | <input checked="" type="radio"/> N/A | YES | NO |

Cooler #: _____

Temperature (°C): 10 C _____

Thermometer ID: 403 _____

Radiological (µCi): _____

COMMENTS (Required for all NO responses above and any sample non-conformance):

September 3, 2019

Mr. Daniel Brown
Lancaster County Solid Waste Authority
1299 Hbg Pike, P.O. Box 4425
Lancaster, PA 17604

Certificate of Analysis

Project Name:	CONTIGUOUS LANDOWNER- 3125 RIVER RD	Workorder:	3053823
Purchase Order:	PO1000126	Workorder ID:	3RD QTR 2019-3125 RIVER RD

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Friday, August 23, 2019.

The ALS Environmental laboratory in Middletown, Pennsylvania is a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory and as such, certifies that all applicable test results meet the requirements of NELAP.

If you have any questions regarding this certificate of analysis, please contact Ms. Susan J Scherer (Project Coordinator) at (717) 944-5541.

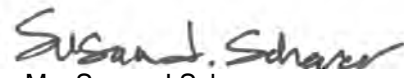
Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications section of the ALS website at www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads.

This laboratory report may not be reproduced, except in full, without the written approval of ALS Environmental.

ALS Spring City: 10 Riverside Drive, Spring City, PA 19475 610-948-4903

CC: Mr. Nicholas Rogers , Ms. Jordan Gallagher , Landowner , Mr. Jeff Musser

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.


Ms. Susan J Scherer
Project Coordinator

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SAMPLE SUMMARY

Workorder: 3053823 3RD QTR 2019-3125 RIVER RD

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
3053823001	3125 River Road, Conestoga, PA	Water	8/23/2019 13:44	8/23/2019 17:59	Mr. Brian G Shade

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SAMPLE SUMMARY

Workorder: 3053823 3RD QTR 2019-3125 RIVER RD

Notes

- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 - Field Services Sampling Plan).
- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
- The Chain of Custody document is included as part of this report.
- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are performed in the laboratory and are therefore analyzed out of hold time.
- Method references listed on this report beginning with the prefix "S" followed by a method number (such as S2310B-97) refer to methods from "Standard Methods for the Examination of Water and Wastewater".
- For microbiological analyses, the "Prepared" value is the date/time into the incubator and the "Analyzed" value is the date/time out the incubator.
- An Analysis-Prep Method Cross Reference Table is included after Analytical Results & Qualifiers section in this report.

Standard Acronyms/Flags

J	Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
U	Indicates that the analyte was Not Detected (ND)
N	Indicates presumptive evidence of the presence of a compound
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RDL	Reporting Detection Limit
ND	Not Detected - indicates that the analyte was Not Detected at the RDL
Cntr	Analysis was performed using this container
RegLmt	Regulatory Limit
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
%Rec	Percent Recovery
RPD	Relative Percent Difference
LOD	DoD Limit of Detection
LOQ	DoD Limit of Quantitation
DL	DoD Detection Limit
I	Indicates reported value is greater than or equal to the Method Detection Limit (MDL) but less than the Report Detection Limit (RDL)
(S)	Surrogate Compound
NC	Not Calculated
*	Result outside of QC limits

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ANALYTICAL RESULTS

Workorder: 3053823 3RD QTR 2019-3125 RIVER RD

Lab ID: **3053823001** Date Collected: 8/23/2019 13:44 Matrix: Water
Sample ID: **3125 River Road, Conestoga, PA** Date Received: 8/23/2019 17:59

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			8/30/19 04:40	VLM	K
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			8/30/19 04:40	VLM	K
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/30/19 04:40	VLM	K
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/30/19 04:40	VLM	K
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/30/19 04:40	VLM	K
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/30/19 04:40	VLM	K
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/30/19 04:40	VLM	K
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			8/30/19 04:40	VLM	K
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			8/30/19 04:40	VLM	K
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			8/30/19 04:40	VLM	K
Toluene	ND		ug/L	1.0	SW846 8260B			8/30/19 04:40	VLM	K
Total Xylenes	ND		ug/L	3.0	SW846 8260B			8/30/19 04:40	VLM	K
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			8/30/19 04:40	VLM	K
Trichloroethene	ND		ug/L	1.0	SW846 8260B			8/30/19 04:40	VLM	K
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			8/30/19 04:40	VLM	K
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			8/30/19 04:40	VLM	K
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	119		%	62 - 133	SW846 8260B			8/30/19 04:40	VLM	K
4-Bromofluorobenzene (S)	102		%	79 - 114	SW846 8260B			8/30/19 04:40	VLM	K
Dibromofluoromethane (S)	102		%	78 - 116	SW846 8260B			8/30/19 04:40	VLM	K
Toluene-d8 (S)	95.7		%	76 - 127	SW846 8260B			8/30/19 04:40	VLM	K
WET CHEMISTRY										
Alkalinity, Bicarbonate	224		mg/L	5	SM2320B-2011			8/29/19 07:00	MBW	C
Alkalinity, Total	224	1	mg/L	5	SM2320B-2011			8/29/19 07:00	MBW	C
Ammonia-N	ND		mg/L	0.100	D6919-09			8/29/19 19:50	AK	B
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			8/28/19 13:26	AK	B
Chloride	95.9		mg/L	2.0	EPA 300.0			8/24/19 11:51	CHW	C
Fluoride	ND		mg/L	0.20	EPA 300.0			8/24/19 11:51	CHW	C
Halogen, Total Organic (TOX)	ND		ug/L	20.0	SW846 9020B			8/28/19 15:49	PAG	I
Nitrate-N	5.7		mg/L	0.20	EPA 300.0			8/24/19 11:51	CHW	C
Nitrite-N	ND		mg/L	0.20	EPA 300.0			8/24/19 11:51	CHW	C
pH	7.40	2	pH_Units		S4500HB-11			8/29/19 07:00	MBW	C
Phenolics	ND		mg/L	0.005	EPA 420.4	8/27/19 13:01	C_D	8/28/19 08:23	C_D	H
Specific Conductance	723		umhos/cm	1	SM2510B-2011			8/29/19 07:00	MBW	C

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ANALYTICAL RESULTS

Workorder: 3053823 3RD QTR 2019-3125 RIVER RD

Lab ID: **3053823001** Date Collected: 8/23/2019 13:44 Matrix: Water
 Sample ID: **3125 River Road, Conestoga, PA** Date Received: 8/23/2019 17:59

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Sulfate	13.7		mg/L	2.0	EPA 300.0			8/24/19 11:51	CHW	C
Total Dissolved Solids	411		mg/L	25	S2540C-11			8/29/19 14:05	D1C	C
Total Organic Carbon (TOC)	1.1		mg/L	0.50	SM5310B-2011			8/31/19 03:15	PAG	F
Turbidity	0.15		NTU	0.10	SM2130B-2011			8/24/19 06:00	R2B	C
METALS										
Calcium, Total	0.86		mg/L	0.050	EPA 200.7	8/29/19 14:30	SXC	8/30/19 11:57	MNP	D1
Calcium, Dissolved	0.77		mg/L	0.10	EPA 200.7	8/27/19 08:50	MNP	8/28/19 12:23	MNP	E
Iron, Total	ND		mg/L	0.030	EPA 200.7	8/29/19 14:30	SXC	8/30/19 11:57	MNP	D1
Iron, Dissolved	ND		mg/L	0.060	EPA 200.7	8/27/19 08:50	MNP	8/28/19 12:23	MNP	E
Magnesium, Total	0.12		mg/L	0.050	EPA 200.7	8/29/19 14:30	SXC	8/30/19 11:57	MNP	D1
Magnesium, Dissolved	0.12		mg/L	0.10	EPA 200.7	8/27/19 08:50	MNP	8/28/19 12:23	MNP	E
Manganese, Total	ND		mg/L	0.0025	EPA 200.7	8/29/19 14:30	SXC	8/30/19 11:57	MNP	D1
Manganese, Dissolved	ND		mg/L	0.0050	EPA 200.7	8/27/19 08:50	MNP	8/28/19 12:23	MNP	E
Potassium, Total	3.2		mg/L	0.25	EPA 200.7	8/29/19 14:30	SXC	8/30/19 11:57	MNP	D1
Potassium, Dissolved	3.1		mg/L	0.50	EPA 200.7	8/27/19 08:50	MNP	8/28/19 12:23	MNP	E
Sodium, Total	158		mg/L	0.25	EPA 200.7	8/29/19 14:30	SXC	8/30/19 11:57	MNP	D1
Sodium, Dissolved	161		mg/L	0.50	EPA 200.7	8/27/19 08:50	MNP	8/28/19 12:23	MNP	E
FIELD PARAMETERS										
pH, Field (SM4500B)	7.36		pH_Units		Field			8/23/19 13:44	BGS	N
Specific Conductance, Field	732		umhos/cm	1	Field			8/23/19 13:44	BGS	N
Temperature	17.90		Deg. C		Field			8/23/19 13:44	BGS	N

Susan J. Scherer
 Ms. Susan J Scherer
 Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3053823 3RD QTR 2019-3125 RIVER RD

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
3053823001	1	3125 River Road, Conestoga, PA	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
3053823001	2	3125 River Road, Conestoga, PA	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				

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ANALYSIS - PREP METHOD CROSS REFERENCE TABLE

Workorder: 3053823 3RD QTR 2019-3125 RIVER RD

Lab ID	Sample ID	Analysis Method	Prep Method
3053823001	3125 River Road, Conestoga, PA	D6919-09	
3053823001	3125 River Road, Conestoga, PA	EPA 200.7	EPA ACID
3053823001	3125 River Road, Conestoga, PA	EPA 200.7	EPA TRMD
3053823001	3125 River Road, Conestoga, PA	EPA 300.0	
3053823001	3125 River Road, Conestoga, PA	EPA 410.4	
3053823001	3125 River Road, Conestoga, PA	EPA 420.4	420.4/9066
3053823001	3125 River Road, Conestoga, PA	Field	
3053823001	3125 River Road, Conestoga, PA	S2540C-11	
3053823001	3125 River Road, Conestoga, PA	S4500HB-11	
3053823001	3125 River Road, Conestoga, PA	SM2130B-2011	
3053823001	3125 River Road, Conestoga, PA	SM2320B-2011	
3053823001	3125 River Road, Conestoga, PA	SM2510B-2011	
3053823001	3125 River Road, Conestoga, PA	SM5310B-2011	
3053823001	3125 River Road, Conestoga, PA	SW846 8260B	
3053823001	3125 River Road, Conestoga, PA	SW846 9020B	

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CHAIN OF CUSTODY / REQUEST FOR ANALYSIS
ALL SHADED AREAS MUST BE COMPLETED BY THE CLIENT / SAMPLER. INSTRUCTIONS ON THE BACK.

CO AL
 1 of 1
 * 3 0 5 3 8 2 3 *

Client Name: LCSWMA - Christian C. Beck
 Address: 3125 River Road
 Conestoga, PA 17516
 Contact: Christian C. Beck
 Phone#: (717) 871-0448

Project Name#: LCSWMA - Quarry
 Bill To: Lancaster County Solid Waste MA
 Normal-Standard TAT is 10-12 business days.
 Rush-Subject to ALS approval and surcharges.
 Date Required: _____ Approved By: _____
 Email? -Y -N
 Fax? -Y -N

Container Type	AG	AN	AN	AN	CG	PL	PL	PL	PL	PL	PL	PL
40 ml	HCl	H2SO4	H2SO4	HCl	40 ml	250 ml	120 ml	120 ml	120 ml	500 ml	500 ml	500 ml
Preservative	HCl	H2SO4	H2SO4	HCl	H2SO4	HNO3	HNO3	HNO3	HNO3	None	None	None

Sample Date	Time	Matrix	TOC	O-OH	TOX	SW846-8260 VOCs	FM	NH3-N, COD	Dissolved Metals: Ca, Fe, Mg, Mn, K, Na	Metals: Ca, Fe, Mg, Mn, K, Na	PH, TDS, NO2, NO3, Cl, SO4, F, Pb, SpC	Alkalinity, HCO3
08/23/19	1344	G DW	2	1	2	23 X						
						Alzula						

Project Comments: _____

LOGGED BY (signature): _____

REVIEWED BY (signature): _____

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
ASB Shockey	8/23/19	1755			

ALS Field Services: Pickup Labor
 Composite_Sampling Rental_Equipment
 Other: _____

Special Processing: USACE Navy
 State Samples Collected In: NY NJ PA NC
 Reportable to PADEP? Yes No
 PWSID #: _____
 EDDS: Format Type: _____

* G=Grab; C=Composite **Matrix - AL=Air; DW=Drinking Water; GW=Groundwater; Oil-Oil; Cl=Other Liquid; SL=Sludge; SO=Soil; WP=Wipe; WW=Wastewater
 ALS ENVIRONMENTAL SHIPPING ADDRESS: 34 DOGWOOD LANE, MIDDLETOWN, PA 17057
 Rev 8/04



301 Fulling Mill Road
 Middletown, PA 17057
 P: (717) 944-5541
 F: (717) 944-1430

Condition of Sample Receipt Form

Client: LCSWMA Work Order #: 3053823 Initials: gn Date: 8/24/19

1. Were airbills / tracking numbers present and recorded?..... NONE YES NO
 Tracking number: _____
2. Are Custody Seals on shipping containers intact?..... NONE YES NO
3. Are Custody Seals on sample containers intact?..... NONE YES NO
4. Is there a COC (Chain-of-Custody) present?..... YES NO
5. Are the COC and bottle labels complete, legible and in agreement?..... YES NO
 - 5a. Does the COC contain sample locations?..... YES NO
 - 5b. Does the COC contain date and time of sample collection for all samples?..... YES NO
 - 5c. Does the COC contain sample collectors name?..... YES NO
 - 5d. Does the COC note the type(s) of preservation for all bottles?..... YES NO
 - 5e. Does the COC note the number of bottles submitted for each sample?..... YES NO
 - 5f. Does the COC note the type of sample, composite or grab?..... YES NO
 - 5g. Does the COC note the matrix of the sample(s)?..... YES NO
6. Are all aqueous samples requiring preservation preserved correctly? N/A YES NO
7. Were all samples placed in the proper containers for the requested analyses, with sufficient volume?..... YES NO
8. Are all samples within holding times for the requested analyses?..... YES NO
9. Were all sample containers received intact and headspace free when required? (not broken, leaking, frozen, etc.)..... YES NO
10. Did we receive trip blanks (applies only for methods EPA 504, EPA 524.2 and 1631E (LL Hg)?..... N/A YES NO
11. Were the samples received on ice?..... YES NO
12. Were sample temperatures measured at 0.0-6.0°C... collected same day..... YES NO
13. Are the samples DW matrix ? IF YES, fill out Reportable Drinking Water questions below..... YES NO
 - 13a. Are the samples required for SDWA compliance reporting?..... N/A YES NO
 - 13b. Did the client provide a SDWA PWS ID#?..... N/A YES NO
 - 13c. Are all aqueous unpreserved SDWA samples pH 5-9?..... N/A YES NO
 - 13d. Did the client provide the SDWA sample location ID/Description?..... N/A YES NO
 - 13e. Did the client provide the SDWA sample type (D, E, R, C, P, S)?..... N/A YES NO

Cooler #: _____
 Temperature (°C): 8°C
 Thermometer ID: 403
 Radiological (µCi): _____

COMMENTS (Required for all NO responses above and any sample non-conformance):

